ABBREVIATIONS

- **Ai** - Agricultural Bank
- **ACS** - Agricultural Cooperative Society
- **ADPB** - Agricultural Development Planning Bureau
- **AERC** - Agricultural Engineering Research Center
- **AERTTC** - Agricultural Engineering Research, Training and Testing Center
- **ARTEO** - Agricultural Research, Training, Extension Organization
- **ASC** - Agricultural Service Center
- **ASID** - Agricultural Statistics and Information Department
- **ASN** - Agricultural Sector Note (World Bank, May 4, 1992)
- **ASS** - Agricultural Statistics Service
- **CAPES** - Center for Agricultural Planning and Economic Studies
- **DPS** - Data Processing Service
- **FDPPC** - Fertilizer Distribution and Pesticide Production Company
- **FFYP** - First Five-Year Plan
- **FRO** - Forestry and Range Organization
- **GIS** - Geographic Information System
- **GTC** - Government Trading Corporation
- **ICM Co** - Iranian Combine Manufacturing Corporation
- **IFRTO** - Iranian Fisheries Research and Training Organization
- **IIP** - Integrated Informatics Plan
- **IMSS** - Industry & Mining Sector Study (World Bank, August 7, 1992)
- **IARC** - International Agricultural Research Center
- **IFAD** - International Fund for Agricultural Development
- **ISC** - Iranian Statistical Center
- **ITM Co** - Iran Tractor Manufacturing Corporation
- **MOA** - Ministry of Agriculture
- **MOE** - Ministry of Energy and Water
- **MOJ** - Ministry of Jehad-e-Sazandegi
- **NAO** - Nomad Affairs Organization
- **NFMC** - National Farm Mechanization Committee
- **PARCC** - Provincial Agricultural Research Consultative Committee
- **PBO** - Planning and Budget Organization
- **PC** - Production Cooperative
- **PDRI** - Pests and Diseases Research Institute
- **PPO** - Plant Protection Organization
- **RLDP** - Rangelands and Livestock Development Project
- **RSC** - Rural Service Cooperative
- **RSS** - Remote Sensing Service
- **RWA** - Regional Water Authority
- **SFYP** - Second Five-Year Plan
- **SPII** - Seed and Plant Improvement Institute
- **SWRI** - Soil & Water Research Institute
- **WAD** - Water Affairs Department

YEARS

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EXCHANGE RATE

Up to March 20, 1993, a multiple exchange rate system operated. In 1991-3, there were three rates:

- **The Official Rate**
  - Rls 70 = US$1
- **The Competitive Rate**
  - Rls 600 = US$1
- **The Floating Rate**
  - Rls 1450-1550 = US$1

Since March 21st, 1993, the rates have been unified. On September 10, 1993, the Unified Rate stood at Rls 1,584 = US$1.
# ISLAMIC REPUBLIC OF IRAN

**SERVICES FOR AGRICULTURE AND RURAL DEVELOPMENT**

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This Study was prepared on the basis of a mission in December 1992 by a World Bank team consisting of Christopher Ward (Team Leader), Jean-Francois Barres (Agricultural Economist), Johannes ter Vrugt (Agriculturist), Anthony Pritchard (Research Specialist) and consultants Sylvie Tiller (Marketing), Daphne Spurling (Women in Development) and Trevor Cree (Mechanization), working in collaboration with an Iranian counterpart team from the Ministry of Agriculture and the Ministry of Jehad-e Sazandegi. Additional material was provided from missions in 1991 and 1992 by Cornelis de Haan (Livestock), Colin Holloway (Forestry) and Willem Zijp (Extension). The Study was written by Christopher Ward. Stanley Chin (Summer Intern) did the DRC analysis, Shish Kumar (Consultant) worked on statistics, and presentation was the responsibility of Josephine Salang with inputs from Rose Rehman, Conchita Castildio, and Govind Bora. Peer Reviewers were Graeme Donovan (Principal Economist) and Oskar Honisch (Principal Agriculturist), and valuable comments were provided by Dirk van der Sluijs, Rahul Raturi, Mohamed Ben Ali, Michael Nightingale, Tijan Sallah, Sarsher Khan, Hjalte Sederlof and Hassan Fazal. The Division Chief was Ngozi Okonjo-Iweala, the Lead Economist William Tyler and the Department Director Ram Chopra. The study was discussed with Government in July 1993 during a mission by Christopher Ward and Sunita Gandhi. The Gray Cover version was produced following further discussions with Government in October 1993 and February 1994, after the transfer of responsibility for Iran to WN1 - Division Chief Odin Knudsen, Lead Economist John M. Underwood, Director Daniel Ritchie.

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ISLAMIC REPUBLIC OF IRAN

IRAN: SERVICES FOR AGRICULTURE AND RURAL DEVELOPMENT

EXECUTIVE SUMMARY

The Agriculture Sector (Chapter I)

1. Agriculture remains important to the Iranian economy, contributing a fifth of GDP, one-third of employment, four-fifths of food needs and one third of non-oil exports. Agriculture is predominantly a smallholder activity and involves significant use of fertilizers and mechanization. Policy in the 1980s aimed at self-sufficiency in basic products and at maintaining low consumer prices, and used input subsidies, guaranteed procurement prices and consumer subsidies to achieve these goals. These policies were implemented through extensive parastatal involvement in marketing and processing. The sector did respond to these incentives but inefficiently, and the cost was high - Rls 575 billion (US$385 million) in economic subsidies to the sector in 1991/2. The policy also encouraged the non-sustainable exploitation of groundwater and marginal lands.

2. Since 1990, and in parallel with changes throughout the economy, the Government has been moving towards economic liberalization in the sector. Input subsidies are being phased out, Government procurement is limited to a few crops and producer prices are now close to import parity level. Consumer subsidies are also being phased out. These adjustments set the stage for the necessary move away from control and intervention to concentrate on support to the private sector, on the efficient provision of essentially public services, and on the protection of vulnerable groups.

3. The evolution of public services also needs to take account of longer term shifts taking place in agriculture and rural society. As price distortions disappear, farmers have started to shift to more to high value added products, like horticulture and animal fattening. Some products appear to be economically marginal, which underlines the urgency of good research on rainfed smallholder farming. There is a trend to reduction in farm sizes under demographic pressure, greater demand for off-farm employment and for investments in rural infrastructure and communications, and a redefinition of the role of women in smallholder farming.

4. In the face of these changes, it is imperative for the agricultural strategy to be formulated on the basis of precise national objectives for the sector, including: (i) specifying production programs for each agro ecological zone-based on products with comparative advantage; (ii) sustaining the small farm economy through producer services and rural development; (iii) boosting commercial production and the trade balance by setting up the policy and legal framework that will encourage private investment and enterprise; (iv) working towards sustainability through regulatory and control systems; and (v) relieving poverty through social and investment programs. Services will need to focus more on profitability and sustainability, on poorer farms, on marginal systems and on women, and on rural development and off-farm employment.

Services to Agriculture and Rural Development (Chapter II)

5. A broad range of services is provided to the rural sector. Government’s role grew during the 1970’s, taking over activities in input supply, marketing

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*1/ A broad overview of the agriculture sector and of sector policies and trends is provided by the 1992 Agriculture Sector Note (ASN - World Bank, May 4, 1992). The present Study relies on the ASN for its context, and focuses in detail on the public and private provision of services to producers.*
and processing. The Ministry of Agriculture (MoA) provides services to crop production, including research and extension, and through parastatals - input supply, credit, and marketing and processing for a number of crops. MoA employs 68,000 staff and has a budget of about US$140 million a year. The Ministry of Jehad-e-Sazandegi (MoJ) provides services to livestock and range, forestry and fisheries. It is also responsible for fostering civil works development through rural communities. MoJ employs 80,000 staff and has a budget of about US$310 million annually. As part of the structural adjustment program, MoA and MoJ were restructured in April 1993. The objective was to bring services into line with the changed environment, reducing control functions, putting more emphasis on conservation and resource management and decentralizing services to the provinces and giving autonomous status to those slated for privatization. The change did not, however, address the key problems of coordinated planning and the organization of research and extension, that are currently split between MoA and MoJ.

6. In the era of adjustment, Government has to determine the appropriate distribution of responsibility for services between the public and the private sector. Some services have a public character - policy analysis and public resource allocation, much of research, extension and plant protection, land and water resource management, and rural development. Other services are better provided by the private sector, e.g. production, marketing, processing, and livestock services. The challenge is twofold: to encourage private sector delivery, and to reinforce essentially public services in a cost effective manner. Affordability is a key criterion: the total cost of Government support to the rural sector is approximately Rs. 1.7 trillion (US$1.1 billion) each year.

Policy Analysis and Resource Allocation (Chapter III)

7. Structural adjustment will change the nature of demand for planning and economic analysis. The increased role for the private sector and the process of decentralization will reduce the role of central planning and underline the private sector's need for information on Government policy and investment programs, on market prospects, etc. The decline in Government's share of resources and its reduced role in the economy will create a demand for more rigorous analysis of public spending. The emphasis on comparative advantage as the determinant of policy will create a strong demand for skills in economic analysis. Finally, the stresses of the adjustment process and the introduction of targeted interventions to help the poor will call for more socio-economic monitoring and poverty analysis, together with transparent protection measures.

8. The 1993 reorganization of MOA created a structure better adapted to meeting these demands. This structure needs to be built up and there is a need for training, equipment and the development of new tools like Geographical Information Systems (GIS), remote sensing, analysis of subsectors and projects, and an integrated informatics plan. As a precondition to these investments, there is a need for better integration of planning and resource allocation in the sector: MOA's Center for Agricultural Planning and Economic Studies (CAPES) could take a more prominent role in coordinating planning for land and water resources; preparation of a national master plan would help coordinate remote sensing activities; and responsibilities for agricultural statistics need to be defined among MoA, MoJ and the Iranian Statistical Center.

Farmer Information (Chapter IV)

9. Iran has well-established services for research and extension working basically on a top down transfer of technology model. This has been successful with larger farmers but has done less for the mass of smallholders. The separation of crops services from livestock and forestry services has led to overlap, gaps and a fragmented approach to farmers' problems. There has been no encouragement of private participation in research and extension.

10. The Study recommends a progressive change of approach, to put research and extension at the service of the farmer, including consolidation of MoA and
MoJ research and extension, joining MoA's structured approach and technical expertise to MoJ's bottom-up philosophy. It is recommended that research and extension work together with farmers in a Farming Systems Approach (FSA). The existing research policy needs to be reviewed and a master plan and an investment program need to be worked out. Extension needs to develop participatory approaches, learn diagnostic skills, promote farmer groups, and use highly-geared and innovative delivery media. Human resource development is vital - education, training, incentives - to maintain morale and to raise production standards. The involvement of the private sector and of the universities in both research and extension could also be actively promoted.

11. The role of women in farming is important and there is scope to focus current initiatives in women's extension by an improved data base feeding into a women-oriented research and extension agenda. Training facilities for women farmers and technicians are a priority.

12. Technical training for agriculture produces about 1,500 graduates annually but few are ready for employment or go to work as farmers. A review of the system is recommended to upgrade quality and to match the training to demand from potential employers.

Inputs (Chapter V)

13. The heavy subsidization of inputs of the 1980s and the concentration on parastatal monopolies are now being dismantled and competition in input supply is being proposed. It is important to help private businesses to develop and so avoid disruptions in supply during the transition. It is also important to protect the vulnerable poor from the effects of the price rises.

14. For fertilizer, it is recommended that prices be brought to border level in three stages by 1998, and imports and distribution be opened up to the private sector on demand. There is scope to privatize the Fertilizer Company and promote the creation of private soil laboratories. Where Government has some control over output prices, there would be an advantage in bringing these to border levels. Research and extension need to evaluate the effect of changes in relative prices, and make revisions to fertilizer recommendations.

15. For plant protection, there is a clear role for public intervention in regulation, environmental protection and the control of common pests. The Plant Protection Organization requires reinforcement to carry out these roles, with special emphasis on the promotion of Integrated Pest Management (IPM). Formulation, crop spraying and distribution may be left to the private sector. It is recommended that parastatal pesticide and crop spraying businesses be sold to the private sector.

16. There is scope for private involvement in seed production and distribution. Preconditions are the elimination of subsidies and a legal framework to protect breeders' interests. Government has a role in then encouraging local seed production and exchange, and in promoting larger scale production by local and international firms. The seed multiplication operations of the parastatal Seed Company could be privatized.

17. Iranian agriculture has a very high machinery force, however, it is largely under-utilized. Prices are moving to international levels and there is scope for privatization of the manufacturing and distribution parastatals. A single institution needs to have responsibility for mechanization, and a single organization, possibly with private participation, should conduct adaptive research.

18. Lending rates for agricultural credit are set at levels below those for other sectors. As a result, the Agricultural Bank (AB) is dependent on Government lines of credit for funds and is experiencing financial problems. The Study recommends that deposit and lending rates for AB be set to allow it to compete for deposits and to cover its costs. AB's future role, probably as a
full service rural financial institution, could be determined by the upcoming rural finance study.

19. Since 1980, rural cooperatives in Iran have been used as instruments of Government policy and lack any institutional independence. The system has potential to evolve into a farmer based and managed movement, with help from the international cooperative community. It is recommended that Government’s role be limited to setting up and monitoring a framework to protect members’ interests. Where farmer demand exists, cooperatives could develop new roles, e.g. in input supply, crop marketing and processing, savings and loans, and machinery services.

Livestock, Forestry and Fisheries (Chapter VI)

20. The separation of natural resource management and livestock from crop production caused by the transfer of departments to MoJ, has created a fragmented approach to mixed farming. Animal husbandry and range management are two areas that have suffered most. In general, there is a need to redefine the role of public services in these subsectors, to privatize some services and parastatals and to increase cost recovery.

21. In livestock, a start has been made to privatize breeding and veterinary services. Other areas for privatization are: feed production and meat imports. There is scope too for using registered technicians for drug provision and for subcontracting public services like meat inspection and compulsory vaccinations. Charges for clinical treatments and non-compulsory vaccinations are being raised to increase revenues and allow the private sector to compete.

22. In range management, the priority is to reverse the degradation of range lands and to recover marginal land that was ploughed for arable crops in the 1980s. This requires more concerted efforts on extension, training and enforcement of rules. The Government program has already made significant demonstrations in this direction and need to be expanded with direct involvement of range users. Watershed management needs to be improved by accelerating conservation programs; the fusion of MoA and MoJ services would help this process.

23. In forestry, there is scope to privatize the state-owned forest industry plants. Government role in afforestation can move progressively to providing the incentive framework and management support, particularly in social forestry where socio-economic studies and pilot projects are suggested to help define a national strategy.

24. Fisheries are a large resource and fishing is a fast growing industry. The Government has made significant progress towards privatizing these operations. The Study recommends that the privatization of large-scale operations be completed and that public services focus on developing a viable cooperative artisanal fishing industry.

Rural Development (Chapter VII)

25. To counter rural-urban drift, Government has invested in rural development, including infrastructure, economic diversification and job creation. MoJ implements the program, working through traditional and modern structures to obtain participation in programs and in costs. Traditional user groups are common in Iran and it is recommended that the potential for more participatory development programs based on these structures be studied.

26. The physical achievements of MoJ’s rural infrastructure program (costing Rls 132 billion, US$88 million in 1992/93) are considerable: potable water in 18,000 villages, electricity for two-thirds of the rural population, 60,000 km of rural roads. Now the challenge is to ensure sustainable operation and maintenance through transfer of responsibility to village communities. It is suggested that MoJ also review the whole program to determine a cost-effective strategy for the next decade.
27. Small-scale industry, including rural handicrafts, accounts for over half of industrial employment. MoJ services include extension, procurement, marketing and rural industrial estates. During the dirigiste 1980s, this support was essential, but now public support could focus more on providing information, training and marketing support. Private promotion of rural enterprises is being encouraged by Government and should be accelerated. Associated finance and procurement services could be provided by the market. Priority should be given to reviewing the industrial estates program, where progress has been slow and costs high.

28. MoJ's support to nomads is moving into a new phase with an ambitious voluntary settlement program. It will be necessary to ensure the economic viability - without continuing subsidies - of the settled production systems. Services to nomads need coordination among departments and between MoA and MoJ, which would be aided by the fusion of MOA and MOJ services.

Marketing and Processing (Chapter VIII)

29. Government remains dominant in the marketing, processing and pricing of wheat and many industrial crops - sugar, oilseeds, cotton and tea. Policy is liberalization and privatization, but the scope for this depends on economic viability and on the extent of any remaining subsidies.

30. For industrial crops, it is recommended than early analysis should be made of competitiveness in order to define the most appropriate phased development approach. First, a review of their viability could be conducted and decisions taken on protection levels; in any case, protection would be better effected through tariffs rather than quantity restrictions. The relative advantages of sugar cane and sugar beet merit examination and investments in cane should await the outcome of this study. The review might also show which parts of the industrial capacity are surplus to requirements and need to be considered for closure. Removal of price distortions needs to be completed by eliminating input and consumer subsidies and by bringing prices to border levels. In a second phase, privatization could be considered. For wheat, privatization can be envisaged as Government phases out the bread subsidy. The import and distribution of feed grains could be left to the private sector. For horticulture, a market development program needs to be further encouraged with the private sector.

A Greater Role for the Private Sector (Chapter IX)

31. The fundamental prerequisite to private participation is a policy environment that fosters competition and promotes investment. Unification of the exchange rate, liberalization of trade and the removal of subsidies are part of this environment. The completion of this process will contribute to the enabling environment. This could be complemented by defining the objectives and policy for each subsector and stating the role of the public sector and plans for investment and privatization. This should be a mainstay of the Second Five Year Plan (SFYP).

32. In general, the development of private markets requires equal access, and Government has to ensure that private firms suffer no discrimination in access to banking facilities, licenses, etc. In addition, public enterprises, foundations and cooperatives need to operate under the same competitive environment as the private sector, without subsidies and in a transparent and accountable manner.

33. Other preconditions to private sector participation are the lifting of entry restrictions, elimination of price distortions and, in some cases, legislation to protect private interests, such as intellectual property

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2/ This section, and the subsequent section on the private sector, draw on the analysis and recommendations of the World Bank Industrial and Mining Sector Study (March 31, 1993).
legislation to protect research results and breeders’ rights legislation for seed production.

34. Government can also encourage the private provision of formerly public services by contracting services to private agents (e.g., some research, meat inspection, vaccination, forest inventory, rural infrastructure), by promoting development of private institutions (e.g., cooperatives, soil laboratories, trade organizations); by increasing charges for public services to make private provision profitable (e.g., seeds, veterinary care); and by privatization (input supply, tractor production and distribution, feed production and trade, and fishery operations).

Development of Public Services (Chapter X)

35. There are significant constraints on the efficient provision of those services that Government should provide. The biggest challenge is cooperation among public institutions. The best solution would be reorganization that would unify planning, research and extension, fuse forestry, livestock and crop production services, and consolidate planning and management of land and water resources. Reorganization needs to be carried through by decentralization and joint practical field activities.

36. Staff of public institutions need to change in both quality and quantity. New skills in economics, business management, sociology and sustainable resource management are required. Staff may be retrained, and many will transfer into the private sector. A human resources development plan is recommended. In order to meet their obligations to the public and to promote internal efficiency, public services need to develop an information culture.

37. The cost of public services is high. A public expenditure review is recommended, to identify areas for cutting or for increasing efficiency. Increasing cost recovery would raise revenues and give market-drive to services.

38. Perhaps the most important and all-pervading change recommended is from the previous top-down approach to one that gives priority to farmers’ needs. To become responsive to farmers requires an urgent change of culture, development of new diagnostic and participatory techniques, a shift of resources to field level and decentralization of management responsibility. The development of cooperatives and farmers’ groups will be a key element in the future.

39. As better-off farmers respond to market incentives, public services can be concentrated increasingly on smaller farmers, poorer areas and special target groups like women. Part of Government’s role will become the protection of vulnerable groups through a safety net that does not distort economic incentives.

Investment Proposals (Chapter XI)

40. Some recommendations require simply a policy decision, many require studies, most require some kind of investment. The Study identifies possible project ideas, of which the most important are:

- a program to develop research, extension and farmer organization, with a focus on the neglected smaller farmer and under a farming systems approach.

- a program to assist the process of adjustment through support to the institutional development of MoA and MOJ, a public expenditure review, support to planning, policy analysis and statistics, and support to privatization.

- a program to assist in modernizing and privatizing production and distribution of chemical inputs, seeds, mechanization, and animal feed, and to reinforce Government’s residual role.
Islamic Republic of Iran
Aggregate Economic Indicators

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<tbody>
<tr>
<td>total, market price</td>
<td>67,811</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>agriculture</td>
<td>15,392</td>
<td>22.7%</td>
<td>27.7%</td>
</tr>
<tr>
<td>industry</td>
<td>13,033</td>
<td>19.2%</td>
<td>25.7%</td>
</tr>
<tr>
<td>manufacturing</td>
<td>9,218</td>
<td>13.6%</td>
<td></td>
</tr>
<tr>
<td>services</td>
<td>31,912</td>
<td>47.1%</td>
<td>46.8%</td>
</tr>
</tbody>
</table>

Rate of Inflation, 1992:
- implicit GDP deflator 27.9%
- consumer prices 21.7%
- wholesale prices 30.7%

Merchandise Trade Accounts (millions of $)
- Exports 19,279
- Oil 16,343 (85%)
- Agricultural 879 (5%)

Government (1992 billions of current rls)
- Imports 21,150
- Food 2,519 (12%)
- Consumer goods 630 (3%)
- Intermediate goods 14,875 (77%)

Rate of growth, real GDP (1992): 6.4%

Agricultural land use

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractors (estimated)</td>
<td>215,000</td>
<td>(&quot;000 ha)</td>
</tr>
<tr>
<td>Mountains, steep slopes 29%</td>
<td>Total 16,872</td>
<td>Avg.HP/hectare 1</td>
</tr>
<tr>
<td>Desert, degraded land 21%</td>
<td>annual crops 10,296</td>
<td>Urea use (&quot;000 tons) 1,920</td>
</tr>
<tr>
<td>Rangeland, marginal land 30%</td>
<td>irrigated 4,620</td>
<td>Other fertilizers (&quot;000 tons) 1,195</td>
</tr>
<tr>
<td>Forest, scrubland 7%</td>
<td>fallow 5,384</td>
<td>Avg fertilizer use</td>
</tr>
<tr>
<td>Agricultural land 11%</td>
<td>orchard 1,211</td>
<td>(kg/irrigated ha) 376</td>
</tr>
<tr>
<td>Cities 2%</td>
<td>irrigated 1,008</td>
<td></td>
</tr>
<tr>
<td></td>
<td>rainfed 205</td>
<td></td>
</tr>
</tbody>
</table>

Cropping Patterns - main crops (1988-89)

<table>
<thead>
<tr>
<th>Crop</th>
<th>area (th. ha)</th>
<th>avg. yield (kg/ha)</th>
<th>prodn (th. tons)</th>
<th>% change in area 1982-1989</th>
<th>DRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>wheat</td>
<td>6,257</td>
<td>861</td>
<td>6,010</td>
<td>+4%</td>
<td>0.8</td>
</tr>
<tr>
<td>irrigated</td>
<td>2,039</td>
<td>2,034</td>
<td>4,148</td>
<td>+4%</td>
<td>0.7</td>
</tr>
<tr>
<td>rainfed</td>
<td>4,217</td>
<td>442</td>
<td>1,884</td>
<td>+4%</td>
<td></td>
</tr>
<tr>
<td>barley</td>
<td>2,651</td>
<td>1,074</td>
<td>2,847</td>
<td>+30%</td>
<td>1.0</td>
</tr>
<tr>
<td>irrigated</td>
<td>1,046</td>
<td>1,882</td>
<td>2,073</td>
<td>+33%</td>
<td>1.3</td>
</tr>
<tr>
<td>rainfed</td>
<td>1,805</td>
<td>482</td>
<td>1,982</td>
<td>+27%</td>
<td>0.6</td>
</tr>
<tr>
<td>rice (paddy)</td>
<td>519</td>
<td>3,572</td>
<td>1,854</td>
<td>+27%</td>
<td>0.4</td>
</tr>
<tr>
<td>cotton</td>
<td>226</td>
<td>1,732</td>
<td>395</td>
<td>+5%</td>
<td></td>
</tr>
<tr>
<td>sugarbeet</td>
<td>149</td>
<td>23,681</td>
<td>2,535</td>
<td>+1%</td>
<td>0.7</td>
</tr>
<tr>
<td>forage/feed</td>
<td>978</td>
<td>5,805</td>
<td>5,678</td>
<td>+31%</td>
<td>1.1-2.3</td>
</tr>
</tbody>
</table>

Landownership

<table>
<thead>
<tr>
<th>Landowners</th>
<th>size of holding (ha)</th>
<th>% of households</th>
</tr>
</thead>
<tbody>
<tr>
<td># of landholders</td>
<td>avg holding (ha)</td>
<td>0-1</td>
</tr>
<tr>
<td>2,834,201</td>
<td>5.78</td>
<td>1-2</td>
</tr>
<tr>
<td>2-10</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>10+</td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>
بهمن تعلیمی

خدمات کشاورزی و عمران روستایی

خلاصه گزارش

فصل اول - بخش کشاورزی

1. کشاورزی بعنوان یکی از مهم‌ترین بخش‌های اقتصاد ایران باقی خواهد ماند، فعالیت‌های کشاورزی از نظر تولید داخلی، بنیادی اجرای جهانی اجتنابات نژادی و بالاخره بنیادهای کشاورزی گرفته‌یا نشکل می‌دهد. فعالیت‌ها در این بخش گرچه عمدتاً سال‌ها به‌صورت خود می‌باشند ولی در عوض مقدار بسیار زیادی کود شیمیایی و امکانات مکانیزه‌ی در آن استفاده می‌شود. سیاست کشاورزی ایران در دهه ۱۹۸۰ میلادی بر خودکفایی محصولات باغی‌است و اساسی و همچنین پایین تک‌گوشین قبیل محصولات، سوسیس‌های نهادها و تضمین قیمت‌های داخل و پرداخت سودهای مصرفی بوده است این سیاست‌ها با درگیری و دلایل از افرادی که در صنایع تبدیل و بازار همراه بوده و نتیجه‌ی آن‌ها کاهش بازدهی و هزینه‌بای یک‌پاره‌باده است. در بخش کشاورزی گردیده‌است (حدود ۵۷۵ میلیارد ریال معادل ۳۸۵ میلیون دلار سوسیس برای سال ۱۳۷۲-۱۳۹۱) به‌دست‌است. سیاست‌های محور مهم‌ترین موجب شرکت استفاده به دسته‌ای از آب‌های زیر زمینی و زمین‌های حاشیه‌ای (زیمین‌های شیب‌داری که بجای مربع در آن‌ها زارع‌ت می‌شوند) گردیده‌است.

از سال ۱۹۹۰ به موارد تغییراتی که در اقتصاد ایران بوجود آمده، دولت حکم‌هایی را در جهت آزاد سازی اقتصادی در بخش کشاورزی آغاز نموده است. سوپراسیون برق‌های معناداری در حوزه کشاورزی می‌گردد و در حال حاضر، قیمت‌های تولیدات داخلی قبیل به سطح قیمت محصولات وارداتی رسانده است. هم‌چنین سوسیسی مصرفی نیز در حال قطع شدن می‌باشد. این تعادلات در واقع وضعیت مناسبی را برای تغییر سیاست و روش دولت بجای کنترل و دخالت، به تقویت بخش خصوصی و ارائه موثر خدمات است. نهایتاً حمایت از اقشار آسیب پذیر بوجود آورده است.

۳. توسیع خدمات عمومی نیازمند پیشرفت تغییراتی است که می‌باشد در کشاورزی و جامعه روستایی ایران بوجود آید. از زمانی که تحریف قیمت‌ها (خیر واقعی بودن قیمت‌ها) شروع به‌یاب در زمان‌کردن نیز نسبت به محصولاتی که در اوزار افزوده یا نیاز به میوه‌ها و پروراپیدی دام می‌باشد تغییر جهت داشته و علاقه‌مند شده‌اند. بعضی از تولیدات کشاورزی از نظر اقتصادی قابلیت یافته‌ی حداکثری را بکار و لازم است تا هرچه زودتر کار مطلوب و تحقق در خصوص مزارع دیمی و خرده مالکان انجام شود. نظر ناشر از افزایش
तेरा धमनी उठा चुका है, तो क्या मेरे साथ आएगा नई शुरूआत?

कुछ तरह से, आपके साथ समय की ठीक वार्ता होगी?

तेरा हमेशा आता है, क्या मेरे लिए कुछ नया आजा होगा?

क्या आपने किसी मुद्दे पर सोचा है, जिससे मेरे लिए योगदान दे सकता है?

# समाचार:
- आज का प्रातः समाचार आया है, जो सामाजिक मामलों के विषय में है।
- ये समाचार हमें अपने जीवन में ठीक रूप से समय निपटानी की सूचना देता है।

# व्यक्तिगत समस्या:
- मेरे पुत्र को कितना योग्यता दिलानी चाहिए?
- उसके साथ कितने योग्यता के लिए प्रशिक्षण देना चाहिए?

# सामाजिक समस्या:
- किसी समस्या को हल करने के लिए कौन से स्वागती तरीके हैं?
- उस समस्या के लिए कितने योग्यता के लिए प्रशिक्षण देना चाहिए?

# सहयोगी दृष्टि:
- मेरे साथ कौन से हैं सहयोगी?
- उन्हें कितने योग्यता मिल जा सकती?

# आनंद और शोभाय जीवनसाधन:
- कैसे आनंद में रहें और जीवनसाधन किए?
- जीवनसाधन के लिए कितने योग्यता के लिए प्रशिक्षण देना चाहिए?

# आवश्यकता के लिए प्रशिक्षण:
- कितने योग्यता के लिए प्रशिक्षण देना चाहिए?
- उसे कितने योग्यता चाहिए?

# समय दर्शक:
- कितनी समय लगती है?
- जीवनसाधन के लिए कितने योग्यता के लिए प्रशिक्षण देना चाहिए?
خلاصه انجام شده تئوری تولید محصولات، بازاریابی، صنایع تبدیلی و خدمات دامبروری و دامداری. موارد فوق از دو طریق می توانند انجام شود.

1) تشخیص بخش خصوصی.
2) تقویت اساسی بخش دولتی، در رابطه با کارآیی هزینه

استفاده مالی معیار اصلی برای دو افزایش خدمات عمومی می باشد و در این رابطه هزینه کلی مربوط به بخش روستایی که توسط دولت هرساله پرداخت میگردد، حدود 6/1 هزار میلیارد ریال (پیک میلیارد دلار) می باشد.

فصل سوم - تحلیل سیاست و تخصص منابع

7) هرگونه تحلیل ساختاری و تحلیل سیاستی نیازی است تا اقتصاد واقعی را با باید بررسی و تحلیل برنامه‌های دولت پیش‌بینی کند. اقتصادی فرضبخش خصوصی و برنامه‌های مربوط به برنامه‌های از این افزایش خواهد بست و به‌شویش‌های از این برنامه‌ها

تعداد ارزهای و نشانه‌های مربوط به کمک به افزایش آسیب‌پذیر باید باعث می‌گردد که این برنامه اقتصادی و اجتماعی بهبود تحقیق و تحلیلی از فقر توأم با اقتصادی روش و مشخص حمایتی نه که تندیصد گردید.

8) درسال 1393 (1994) تجدید ساختار تشكيلات وزارت كشاورزي منجر به ايجاد فضای مناسب به‌پنجم تکمیل و رعایت مشکلات تغییرات اهداف فوق گردد. اين فضا می‌باست صدور گردید و در این خصوص به موارد زیر از قبیل آموزش، تجهیزات، تکامل و توسعه وسایل و ابزارهای جدید تئوری‌سنجی‌های اطلاعات جغرافیایی، نصب دستگاه‌های انتقال اطلاعات اسمی به‌دور، تجزیه و تحلیل پروژه‌ها و برنامه‌ها و با اخبار به برنامه انفورماتیک مناسبی، نیاز شرکت به‌سازنده می‌شود. به‌عنوان شرکت اولیه‌ای بسیاری که می‌تواند به‌پنجم به‌پنجم در بروز تری در برنامه ریزی و تخصص منابع دربیزی کشاورزی نیاز وجود دارد. دراین رابطه می‌تواند مطالعات و برنامه‌ریزی اقتصادی و کشاورزی دربرگیرنده نتایج در کمترین های مربوط به برنامه‌های اجباری آب و خاک کشور ایفای نماید. به‌نوع و تدریک طرحی جامع و کمک فراوانی به‌پنجم ماهنگی در فعالیت‌های کشاورزی و جهاد سازندگی و مرکز‌های مرحله آماده که توانایی در بررسی‌های کشاورزی درورزندگان‌ها و دانش‌مندان و مرکز‌های مرحله آماده می‌باشد دوبیاره تعریف شوند.
فضل بنجم - نهاده‌ها

۱۳. در بهمن ۱۹۸۰ مقدار نسبتاً زیادی سوپرپد برای فنی و عرضه نهاده‌ها برداخت گردید. در حال حاضر این سوپرپد به مؤسسات دولتی برداخت نمی‌شود و هم زمان عرضه رایگان نهاده‌ها در حالات شکل گیری می‌باشد. بنابراین در جریان شرایطی می‌باشد به منظور توسعه و افزایش برخورداری و phê در عرضه نهاده‌ها علی‌الخصوص در دوره آتی فذ نهاده هک فذ برای حل آسیب‌هایی که در حوزه انتقال نیست، بذیر در مقابل افراد ناشی از انقلاب قیمت‌ها حمایت می‌باشد آورد.

۱۴. در مورد کرده‌های توصیه‌ی می‌شود که قیمت‌ها طی یک سه ماهه و تا سال ۱۹۹۸ به سطح واقعی بررسی و همچنین واردات و توزیع آن براساس تقاضایه و باخص خاصیت‌ها و اکثریت شرکت‌های می‌باشد به بخش خاصیت‌ها و اکثریت شرکت کودک‌هایی با بخش خاصیت‌ها و همچنین زمان‌ها برای ایجاد آزمایشگاه‌های خاص نشانی وجود دارد. زمان‌ها که دو میلیون تولیدی راکتر می‌نماید، بسیار باصره خواهد بود که قیمت‌های این به مرز واقعی بررسی‌ها تحقیق و توزیع می‌باشد کار مربوط به ارزیابی تغییرات نسبی قیمت‌ها را انجام داده و درخصوص توصیه‌های مربوط به شرکت‌های تخصصی بررسی نظری‌نامه‌ها.

۱۵. برای حفظ گیاه و توانایی، دولت نقش بسیار مهم در ارتباط با وضع مقررات حفاظت از محیط زیست وکنترل آفات نباتی تاردد. سازمان‌های حفاظت‌ناپای قربانی نقص فوق‌الذکر می‌باشد تقویت شود و در این رابطه به زمان‌های دفع آفات نباتی ثابت می‌گردد. به منظور تقویت و توزیع می‌باشد به بخش خاصیت‌ها و اکثریت شرکت کودک‌هایی می‌باشد کار مربوط به دفع آفات نباتی و می‌باشد که در حال حاضر در اختیار دولت است به بخش خاصیت‌ها و اکثریت شرکت کودک‌هایی می‌باشد.

۱۶. زمینه‌مناسی برای مشارکت بخش خاصیت‌ها در تولید و توزیع بذیر وجود دارد. در این رابطه ابتدا می‌باشد که سوپرپد‌ها حذف گردد و سپس یک بار نیازی به منظور حفاظت از منافع تولید کننده بذیر ندارند. دولت نقش اساسی و عمدای بعنوان منشأ برای تولید بذیر بالای منافع ویژه آن و همچنین شنوای گزارنده رو به در مقابل ویژه ویژه شرکت‌های داخلی و خارجی در حال کار باکیر بذیر که در حال حاضر کم توسط یک شرکت دولتی انگشید می‌تواند به بخش خاصیت‌ها و اکثریت شرکت کودک‌هایی در حال حاضر کم توسط یک شرکت دولتی انگشید می‌تواند به بخش خاصیت‌ها و اکثریت شرکت کودک‌هایی.

۱۷. کشاورزی ایران در حال حاضر بسیار مکانیزه شده‌گر جریه از این موضوع استفاده مطلوب نمی‌گردد قیمت‌ها در حالات انقلابی به سمت قیمت‌های بین المللی می‌باشد و شرایط مناسبی برای اکثریت شرکت‌های داخلی و می‌باشد. در این رابطه ابتدا می‌باشد یک مؤسسه واحده استولیت مکانیزه کردن و سازمان‌های دیگری که با مشارکت بخش خاصیت‌ها کار تحقیق در این زمینه را به‌همه‌گردد.

۱۸. انر کارمزد اعتبارات اعطایی بانک کشاورزی بسیار کمتر از اعتبارات سایر بانک‌ها می‌باشد. در برخی از مالی بانک به‌وجوه اعطا لاین‌های مه‌که در حال حاضر با مشکلات مالی روبه‌رو می‌باشد. توصیه می‌شود که نره‌های مربوط به سپرده‌ها و اعتبارات اعطایی در بانک کشاورزی بگونه‌ای تبعیض
بروزه‌های آزمایشی برای کمک به تهیه و تدوین یک استراتژی ملی در این خصوص پیشنهاد می‌شود.

24. شیلات یکی از اصول مهم و غنی در ایران بوده و این صنعت بسیاری از ملاحظات داشته است. این گزارش توصیه می‌نماید که خصوصی‌سازی شیلات در چهارده گسترده‌ای تکمیل شود و خدمات عمومی بیشتر متوافق توسعه و بهبود تعاونی صنعت ماهیگیری گردد.

فصل هفتم - توسعه و عمران روستایی

25. دولت سرمایه‌گذاری های وسیعی برای افزایش برنده از ازفایات مختلف زندگی در شهر و روستا انجام داده است. این سرمایه‌گذاری شامل تأسیسات زیربناهن، توجه به فعالیت‌های اقتصادی و ایجاد اشتغال می‌باشد. وزارت جهاد سازندگی مسئول اجرای برنامه‌های عمرانی و توسعه فرهنگ روستایی کشور می‌باشد. این وزارت به‌طور مداوم برنامه‌های روستایی را در حال اجرا می‌باشد. این برنامه‌ها شامل جلب مشارکت روستایان در انجام و انجام‌های ملی برنامه‌های عمرانی می‌باشد. غالباً بر روی پایداری استیاز از برنامه های توسعه و ارتقاء جامعه که مطالعه و دریافت توصیه می‌شود که مطالعه ای در خصوص چگونگی مشارکت روستایان در برنامه‌های توسعه براساس ساختارهای اخیر ذکر انجام شود.

26. نتایج فیزیکی برنامه‌های زیربناهنی که توسط جهاد سازندگی در روستاها انجام شده است بسیار موفقیت‌آمیز می‌باشد (بطول سال‌های 1992-1993 حدود 132 میلیارد ریال مالی و 88 میلیارد دلار برای طرح‌های زیربناهنی روستایی هزینه شده است). در این رابطه می‌توان به ایسراطی 18000 روستا، برق رسانی به ۶۷۰۰۰ کیلومتر جاده و روستایی اشاره نمود. درحال حاضر چگونگی نگهداری و بهره‌برداری این تأسیسات پس از انتقال آنها به جاویدان روستایی مورد بحث می‌باشد. پیشنهاد می‌شود که وزارت جهاد سازندگی برنامه‌های عمرانی را مورد بررسی قرار دهد و سپس بسیار استراتژی در این گروه با کارآیی‌های دیگر به این نهایی نماید.

27. صنایع کوچک نظیر صنایع دستی بین از این از اشغال صنعتی در روستاها را تشکیل می‌دهد. خدمات وزارت جهاد سازندگی شامل: توزیع، خرید، بازاریابی و مالیات صنایع روستایی می‌باشد. درده 1980 ارائه ی این نوع خدمات چریکی ضروری باید به‌نظر برسد. ولی درحال حاضر خدمات دولت می‌باشد. عموماً بازاریابی صورت پذیرد. در این رابطه، دولت می‌باشد بخش خصوصی را پیش بر باید مشترک در تأسیس بنگاه‌های خصوصی در روستاها نماید. خدمات مالی و خریداری می‌تواند با روابط جدید انگشتری شود. پیشنهاد می‌شود، برنامه‌های بازاریابی صنایع روستاها (تصنیع کوچک) که پیش‌تر به آنها بسیار بهتر و هوزه‌اند بسیار پایدار به‌دیگر برنامه‌های صنعتی در روستاها (تصنیع کوچک) که پیش‌تر به آنها بسیار بهتر و هوزه‌اند بسیار پایدار بوده‌اند.

28. برنامه حمایت وزارت جهاد سازندگی از انتشار پیش‌رفت قابل ملاحظه‌ای نموده و درحال وارد شدن به مرحله جدید (امکان دو طبقه‌ای راه اندازی) می‌باشد. ابتدا لازم است که از اکتشافی بودن طرح مذکور (بدون
فصل هشتم - بازاریابی و صنایع تبدیل

۲۹. دولت در هر صورت تسلط خود را بر صنایع تبدیل، بازاریابی و تهیه‌گران کننده و سایر محصولات کشاورزی صنعتی (نظیر شکر، زیتون، پیه و چای) حفظ خواهد کرد. سایر دولت در هر حال بر آزادسازی و خصوصی سازی استوار می‌باشد و لیکن وضعیت و جهانی این سیاست به اقتصادی بودن و میزان سویسیها است که کامل خواهد داشت.

۳۰. در رابطه با محصولات کشاورزی صنعتی توصیه می‌شود که بررسی و تحلیل همه جانبه در مورد وضعیت قابلیت این نوع محصولات انجام شود و سپس مناسب‌ترین برنامه برای توسعه تعیین گردد. اول مطالعه‌ای در مورد قابلیت برنامه‌ها و سپس تصمیم‌گیری در خصوص سطح و میزان حمایت از صنایع کشاورزی گرفته شود. حمایت هایی که برای محصولات کشاورزی صنعتی از طریق تعرفه‌ها بعمل میآید به مرتبه نسبت به حمایت‌های که از طریق محدود‌الامدی اعمال می‌شود تأثیر بیشتری دارد. زیرا نسبت شکر و چندنر به یکدیگر اینجانب می‌باشد تا یک بررسی کامل در مورد مغز و سرمایه‌گذاری در صنعت شکر قبل از انتخاب این صنعت تبدیل به پرداختی دیگر می‌باشد منظور توجه این بررسی و مطالعه شد. متفاوت این مطالعه نشان خواهد داد که چه مقدار و چه فسمت از از طرفی‌های صنعتی در شرایط محدود‌الامدی و سرمایه‌گذاری می‌باشد و با استفاده از روش‌های مختلف، ارزیابی خصوصی سازی می‌تواند در مورد بررسی و توجه قرار گیرد. در رابطه با تحقیق، محصولات زمانی می‌توانند شرایط شدید که دولت بندریج شروع به حذف سویسی‌های نان نماید. واردات و توزیع علوفه باید به بخش خصوصی‌ای آگذار شود. در رابطه با مروجات، بازار این نوع محصولات فقط از راه تشویق بیشتر بخش خصوصی می‌تواند توسه بهبود.

فصل نهم - بخش‌بزرسی برای بخش خصوصی

۳۱. شرط اولیه و اساسی برای مشارکت بخش خصوصی، ایجاد محیطی است که موجب رقابت و تشویق برای سرمایه‌گذاری گردد. یکسان سازی خرید از آزادسازی تجارت و حذف می‌تواند به‌وجود آورند. بهینه‌ترین محیطی می‌باشد. این شرایط موقعیت کامل می‌گردد که اهداف، سیاست‌های زیربخشیا و نقش بخش دولتی و طرح‌های مربوط به سرمایه‌گذاری و خصوصی سازی تعريف و مشخص شده باشد.

۳۲. بطور کلی، توسه‌بر بازار آزاد و بخش خصوصی مستلزم است که با پیگیری سازی اساسی باشد. دولت می‌باشد اطمنان حاصل نماید که هیچگونه تبعیض در رابطه با دست‌بایی به سهولت باشی، جزو و غیره به شکلی خصوصی اعمال خوشه‌های خوش‌نامه و مبدا به‌اینکه به‌همه‌ای دولتی، بیان‌ها و تعاونی‌ها دقیقاً در محیط رقابت آمیز با بخش خصوصی فعالیت نماید.
شرايط ديگری نيز برای جذب مشارکت بخش خصوصی مهم می‌باشند این شرایط شامل:

1) از مبانی برداشت کلی محمودیت های ورود بخش خصوصی به فعالیت ها، فناوری و ژن‌های
2) حفظ تحقیف قومی

3) و در صورت لزوم، اقدامات حقوقی و قانونی به منظور حمایت از منابع بخش خصوصی نظر قانون مربوط به حمایت از مالکیت های فکری برای حمایت از نتایج تحقیقات و يا قانون حفظ حقوق تولیدکننگان و پروکسیده‌دان بذر و نهال

دلت می‌تواند برخی از خدمات عمومی را بصورت یپمانی و قراردادی به بخش خصوصی واگذار نماید. (نظر تحقیقات، بازرگانی گریست، وکسیناسیون، جنگلداری، تاسیسات زیربنایی روستائی) و این کار می‌تواند از طریق توزیع مؤسسات خصوصی نظر تعاونی‌ها، از هم‌ایگاه‌ها خان شناسی و مؤسسات تجاری صورت بپذیرد. ضمناً افراد متوسط خدمات عمومی به‌جای با بخش خصوصی سودآور باشد (نظر تولید بذر و دامپزشکی) و همچنین خصوصی سازی در مورد عرضه نهاده، تولید و توزیع تراکنه، تولید و تجاری علوفه و خوراک دام و بی‌پردازی از صنعت شیلات می‌تواند به جذب مشارکت بخش خصوصی
سرعت بیشتری دهد.

فصل دهم - توسعه خدمات عمومی

مشکلات و منابع زیادی بر سر راه ارائه مؤثر خدمات عمومی توزیع دولت وجود دارد. برگری در مشکل، ایجاد هماهنگی در بین سازمان‌های دولتی است. بهترین و مناسب‌ترین راه حل این مشکل، تجدید ساختار سازمانی و تشکیلاتی به‌جای موجب ترکیب و ادغام واحدهای نظر بنامه‌ریزی، تحقیق و ترویج، جنگلداری، خدمات مربوط به دامداری، تولید غلات و بنامه بکاربردشماری و مدیریت منابع آب و خاک می‌باشد. تجدید سازمان از هم با بنامه تمرکزیت این فعالیت‌ها عملی در جویش‌های کشاورزی می‌تواند صورت بپذیرد.

کارکنان سازمان‌های دولتی می‌بایست از نظر کیفی و کمی تغییر کنند. مهارت‌های جدیدی در اقتصاد، مدیریت بازرگانی، جامعه شناسی و مدیریت منابع یادگیری می‌باشند. کارکنان دولت چنانچه مورد آموزش مجدید قرارگیرند نتیجه‌ی زیادی از آنها به بخش خصوصی روز خواهند آورد. توسعه‌ی می‌شود طرحی در خصوصی توسعه منابع انسانی اجرا شود. برای اینکه تعداد بخش عمومی خوب انجام شود و کارآئی داخلی آن نیز افزایش باید لازم است که فرهنگ اطلاعاتی و جمع‌آوری و استفاده از اطلاعات توسعه باید.

وزنی خدمات عمومی در ایران بسیار بالاست. توصیه می‌شود که هزینه‌های دولتی مورد تجدید نظر قرارگیرند تا مشخص شود که چه قسمت‌ها و مواردی به منظور افزایش کارآئی می‌باشد حذف گردد. زمانی که هزینه‌ها تأمین و جبران شود در آن صورت درآمدها نیز افزایش خواهد یافت و خدمات فردی تدریجی به بازار و عرضه در بازار را پیش خواهد برد.
2. 

"..."
Introduction - Objectives and Methodology of the Study

Objectives. A broad overview of the agriculture sector and of sector policies and trends is provided by the 1992 Agriculture Sector Note (ASN - World Bank, May, 1992). The present study relies on the ASN for its context and focuses in detail on the provision of services to producers. In the era of structural adjustment, a focus on agricultural services is important for many reasons. On the demand side, liberalization will create manifold new opportunities and a shifting set of relative prices; services are important to enable producers to take advantage of the new market signals. Adjustment too will have a differing impact on various segments of the population; services will need to focus assistance on small farmers, hitherto largely neglected. On the supply side, Government investment and recurrent resources are likely to be increasingly constrained, and public expenditures need to be prioritized. The potential for private sector investment and a parallel strategic redefinition of Government’s role in service provision are corollaries of liberalization.

The objectives of this Study are thus to analyze what should be the respective roles of Government and the private sector; to suggest priorities for change; and to draft an agenda for reinforcement of the services that will remain in the public sector. The Study is timely as Government is deciding options for change and investment under the Second Five Year Plan (SFYP). This process will result in strategies and investment programs for agriculture and rural development.

Scope of the Study. The specific services covered by the Study are:

- Policy and planning services for the sector, including policy analysis capability, physical and financial resource planning and allocation, statistics and information services, and economic and social monitoring.

- Producer services including research, extension, chemical input production and supply, seeds, farm equipment, plant protection, agricultural credit, and services to livestock, range and forestry, and fisheries.

- Rural development, including support to rural infrastructure, rural industry and the nomadic peoples.

Methodology. The Study is set in the context of changes. First, the changes in the agriculture sector and the rural economy that will come about as a result of policy adjustment, particularly the impact on incentives of the lifting of price controls and monopolies, the ending of subsidies and the reduction in Government interventions. Second, the changes that result from the process of development - modernization of the economy, urbanization, developments in education and
society, expansion of the media. Within this vision of the future of agriculture and its role in the economy, the methodology of the Study is to:

- analyze current service provision - institutions, programs, financing, strengths and weaknesses.

- project farmers' requirements for the services over the next decade.

- distinguish essentially public services from those that could also - or instead - be provided by the private sector, and evaluate the advantages and feasibility of transfer.

- identify the policy, institutional, human and financial prerequisites for development of services, both public and private.

- suggest a program for sequenced development of agricultural services.
PART ONE - THE SECTOR

Chapter I - Agriculture in an Era of Change

A. The Sector Today

1.1 The Importance of Agriculture. The agricultural sector currently accounts for about one-fifth of Iran's GDP, worth about US$9 billion at international prices, and nearly one-third of total employment - 15 million people live principally from farming. It supplies about 80% of domestic food requirements (including crops, livestock and fish products), contributes about one third of the value of non-oil exports of goods (US$880 million a year), and provides raw materials for industry. Imports for agriculture and animal husbandry are around US$ 400-500 million per year, while annual food imports amount to some US$ 2.5 billion, about half of which for cereals (mainly wheat).

1.2 Farming Systems. About a third of Iran's land area has some economic use, and about 11% of the land area is under some form of cropping system (Box 1.1). There are 16.5 million hectares of arable land (35% irrigated, 45% rainfed and 20% fallow) and 1 million hectares under perennial crops. Livestock includes 45 million sheep, 30 million goats, 6.5 million cattle, and 550 million chickens. About 60% of agricultural value added comes from crops, 35% from livestock and 5% from fisheries (Box 1.2). Cereals and pulses account for three quarters of the cropped area (Box 1.3) - but only 30% of value added. There are over three million farm households in the country. The typical farm is family-run (91% of land is owner-operated). About 350,000 households (13%) can be classed as commercial farmers: they own 40% of the arable land, contribute half of agricultural valued added and 80 percent of marketed output. Most farms are smaller, subsistence farms and households generally supplement farm income from other sources. Traditional farming systems, using animal or manual land preparation and practicing rainfed agriculture or traditional (ganat) irrigation, were employed by four-fifths of the nation's farmers up to the mid-1970s. Since then, the use of chemical inputs, tractors and pumps has led to a wholesale

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1/ See Volume II, Annex 25 for discussion of farm size and productivity.
change and now most farms are mechanized and traditional irrigation has declined sharply.

B. The Farming Population

1.3 Human Capital\(^2\). Health and nutrition indicators show Iran to be little different from other countries in the region or with similar income. However, Iran's annual population growth rate of 3.6 percent per annum is much higher than for the other countries. Average rural family size is six. Iran's education indicators are below those of countries at a similar income level. Although government is committed to universal education, illiteracy in 1990 was estimated at nearly half the total adult population, and 57 percent of females. School enrollment rates are significantly lower for rural children than for urban ones and there is a growing shortage of teachers in rural areas.

1.4 Farmers and Farming. Twenty five years ago, two out of every three Iranians lived in rural areas. In the year 2000, only one out of every three Iranians will live in rural areas - but the number of people living from farming will have gone up - from 12 million in 1975 to 17 million (Box 1.4). Half the population is under the age of 17 and rural unemployment, particularly among young people, is becoming a problem. Women form only 11% of the formal wage labor force nationally, but provide over half of farm labor. Communications in rural areas are on the whole good. Although only half of the population speak Farsi as their mother tongue, the language is understood by almost everyone. Radios are owned by almost every family and television sets by one household in two.

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2/ See Appendix Table 1 for Key Human Capital Indicators.
Box 1.4: Changes in the Farming Population

1.5 Rural Poverty. A fifth of farm households have less than one hectare of land and half a million households are engaged in agriculture but do not own any land. Under the criteria proposed for the social safety net program, all landless agricultural workers and families farming less than four ha would be considered for social assistance. Under this definition, as much as half of the rural population could be considered needy.

C. Sector Policy and Performance

1.6 Agriculture Policy in the 1980s. Throughout the last decade, Government's overriding policy objective in agriculture has been to achieve self-sufficiency in major "strategic" products, while maintaining consumer prices for staples at a low level. This inward-looking policy translated into an array of support mechanisms involving large subsidies on farm inputs and mechanization, guaranteed crop procurement prices for staples, and consumer subsidies on basic items. These mechanisms have shaped a market which is characterized by an almost complete disconnection between producer and consumer prices (the case of wheat) or the emergence of dual markets (e.g. meat, vegetable oil), and by an extensive role for parapublic agencies in the marketing and processing of agricultural products and inputs. This role was imposed by the need to manage prices of both...
imported and domestic produce. Several agro-processing industries (e.g. cotton, sugar beet, edible oil) were nationalized, and in some cases, production itself is under direct Government control (sugarcane, several agri-business farms). The cooperative sector was mobilized to implement Government marketing policy, and has thereby undergone a distortion of its essentially private character. Government also introduced an array of controls on foreign trade, with quantitative restrictions on imports and exports for most agricultural products. The Government Trading Company (GTC) handled imports of essential goods at the official exchange rate. Exports of food products were banned or controlled.

1.7 Despite the predominantly private and small farm nature of agricultural production, Government has had a high degree of influence on the pattern of output through these various policy instruments. The role of markets and private enterprise in resource allocation has remained accordingly limited. Output did grow during the decade - but production of freely marketed crops like barley, pulses and fodder crops grew much faster than production of the controlled strategic crops like wheat, cotton and sugarbeet (see Box 1.6). In addition, Government's policies had significant negative effects, including: (i) the virtual elimination of competition and its attendant efficiency effects, from the cereals market; (ii) the diversion of resources from more efficient uses; (iii) the nonsustainable exploitation of groundwater and marginal lands; and (iv) high costs for the Government - Rls 90 billion (US$60 million) in direct fertilizer subsidies in 1992/3 - and for the country - Rls 575 billion (US$385 million) in total economic subsidies in 1991/2.

1.8 Recent and on-going policy changes. Government has begun moving towards economic liberalization. Consumer price controls have been lifted for most products. The exchange rate has been unified at close to the market rate, and Government intends to phase out subsidies and to privatize most commercial and production parastatals. In agriculture, procurement prices are set closer to border prices. Subsidies, including those on agricultural inputs, are being gradually removed, although in 1992/93 there

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**Box 1.6: Trend Growth in Output 1976-1990**

(Annual Percentage Growth)

<table>
<thead>
<tr>
<th>Strategic Crops</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>1.7%</td>
</tr>
<tr>
<td>Cotton</td>
<td>-1.0%</td>
</tr>
<tr>
<td>Sugarbeet</td>
<td>-0.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Free Market Crops</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>7.9%</td>
</tr>
<tr>
<td>Paddy</td>
<td>1.6%</td>
</tr>
<tr>
<td>Pulses</td>
<td>3.8%</td>
</tr>
<tr>
<td>Fodder Crops</td>
<td>8.7%</td>
</tr>
</tbody>
</table>

**Source:** Annex Table 3

---

**Box 1.7: Some Agricultural Prices Compared (in Rials unless specified) (1992/3)**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Financial Price</th>
<th>Economic Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea (per kg)</td>
<td>12</td>
<td>227</td>
</tr>
<tr>
<td>Tractor (MF285)</td>
<td>5 million</td>
<td>12 million</td>
</tr>
<tr>
<td>Combine (TH)</td>
<td>79.9 million</td>
<td>46 million</td>
</tr>
<tr>
<td>Land Preparation (per ha)</td>
<td>50,000</td>
<td>95,000</td>
</tr>
<tr>
<td>Wheat (per kg)</td>
<td>180</td>
<td>&gt; 250</td>
</tr>
<tr>
<td>Agricultural Credit (Average Interest Rate)</td>
<td>5%</td>
<td>12-24%</td>
</tr>
</tbody>
</table>

**Source:** Chapter VI and Annex Table 2.
was still a considerable gap (Box 1.7). A bill is being introduced into the Majlis (Parliament) that would replace quantitative restrictions on imports and exports by tariffs. Input distribution is being opened up slowly and the possibilities of privatization of marketing and processing activities and companies are being considered in many subsectors - tea, cotton, sugar, dairy, fisheries, input and equipment manufacturing and distribution. To date, several privatizations have occurred in the fisheries subsector. Some service provision is also being privatized - notably some input supply and livestock services. These adjustments set the stage for changes in the role of Government, which, as recommended in the World Bank’s 1992 Agriculture Sector Note (May 4, 1992), will need to move away from control and intervention (still considerable - see Box 1.8) to concentrate on support to the private sector - particularly the maintenance of a policy environment conducive to enterprise, on the efficient provision of essentially public services, on the strategic public investment, particularly in the rehabilitation of infrastructure, and on the protection of the environment.

<table>
<thead>
<tr>
<th>Production</th>
<th>Effective Private Sector Participation</th>
<th>Marketing and Processing</th>
<th>Effective Private Sector Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crops and Livestock</td>
<td>Yes, dominant</td>
<td>Wheat</td>
<td>Very little</td>
</tr>
<tr>
<td>Fisheries</td>
<td>Yes, dominant</td>
<td>Tee</td>
<td>Subsidiary role</td>
</tr>
<tr>
<td>Forestry</td>
<td>Little</td>
<td>Cotton</td>
<td>Yes, some</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>Beginning</td>
<td>Sugar</td>
<td>No</td>
</tr>
<tr>
<td>Pesticides</td>
<td>Yes, some</td>
<td>Oil Crops</td>
<td>No</td>
</tr>
<tr>
<td>Seeds</td>
<td>Outgrowers only</td>
<td>All Other Crops</td>
<td>Yes, dominant</td>
</tr>
<tr>
<td>Feed</td>
<td>No</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Tractors &amp; Combines</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Other Equipment</td>
<td>Yes, dominant</td>
<td>Services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extension</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fertilizer Supply</td>
<td>Very Limited</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pesticide Supply</td>
<td>50% at retail level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seed Supply</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tractors &amp; Combines</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other Equipment</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Artificial Insemination</td>
<td>Yes, some</td>
</tr>
</tbody>
</table>

D. Agriculture in the Next Decade

1.9 The evolution of public services will also need to take account of longer term shifts in agriculture and rural society. Prospects for agriculture are good economically; Domestic Resource Costs (DRCs)\(^1\) were calculated for major crops and production systems (Box 1.9) and confirm that most activities have good long-

\(^1\) Competitiveness has been analyzed through the calculation of domestic resource costs (DRCs). DRCs were calculated using the simple Balassa approach, dividing the economic value of domestic resource inputs by the net economic value added through production. Domestic resources are land, labor, capital (where included) and water. The net economic value added is the shadow value of output less the shadow (border) costs of tradeable inputs, in this case farm chemicals, tractors, and seeds. A DRC below 1 indicates the existence of a cost advantage in the production of the specific commodity.
term viability. A number of crops are both economically viable and also currently profitable, and the best crops economically are currently very profitable (irrigated horticulture, intensive fattening). But the current prices also reward the less viable and some of the unviable crops (barley, alfalfa) equally highly. It is likely that farmers' priorities will shift towards the more viable crops as price distortions, particularly those on chemical inputs and credit, disappear. Future incentives will, however, continue to favor modern irrigated systems over traditional irrigated and rainfed systems as long as capital and operating cost recovery remains as low as at present on public irrigation perimeters.

1.10 In the long run, the emphasis will shift more to intensive high value added activities in fruit, vegetables and animal fattening, creating demands for research, extension and market development. Cotton has good long-term prospects and might benefit from liberalization and the removal of protection, although this needs research on crop varieties and pest control. Many of the current mainstays of agriculture - wheat in major production systems, rice, some oil crops, irrigated sugarbeet - have reasonable long-term prospects under current technologies and could, with appropriate research and extension, become more attractive. Marginal production of barley, alfalfa, sugarbeet and traditional migratory sheep and goats is likely to decline. This underlines the urgency of good research on alternative crops and rotations and on improved technologies for these marginal farming systems, especially rainfed smallholder farming.

1.11 Other long-term shifts in rural economy and society are likely to include:

- a widening disparity between the larger commercial farms and the smaller traditional farms. More traditional farmers will fall to the poverty line as fragmentation reduces farm sizes further.

- a growth in part-time farming as the population increases and farms get smaller. In parallel, there is likely to be an increased demand for off-farm employment opportunities in rural areas, and for investments in rural infrastructure and communications.

- an increase in male migrant working and a parallel increase in women's role in agriculture.
• some decapitalization of agriculture as higher replacement and fuel costs reveal the underlying unprofitability of some tractor and pump use.

1.12 Long-Term Objectives in the Sector. In the face of these changes, there is a need for a clear vision of national objectives for agriculture - in the long term can the sector contribute more to the foreign exchange balance, and if so should import substitution or export diversification be pursued, what is the expected contribution of the sector to GDP, to what extent can agriculture - or off-farm enterprise - employ the growing labor force and sustain incomes, is the future of agriculture in larger modern farms or can small mixed farms provide a decent livelihood into the next century? These questions were explored in the 1992 Agriculture Sector Note, and will be the subject of a formal policy statement in the forthcoming Second Five-Year Plan (Chapter III). It is likely that objectives would include:

• sustaining the small farm economy as the mainstay of rural life and the highest potential employer of surplus labor. To reach this objective would require a sustained commitment to research and extension on mixed farming systems; public and private programs to assist the growth of rural industry and handicrafts; and a strong rural development program to enhance village amenities and services.

• increasing output, incomes and foreign exchange earnings and savings on larger, commercial holdings. This objective would best be achieved by policy instruments rather than by public investment - if Government ensures that prices are market-determined, that the legal and regulatory environment gives scope for enterprise, and that Government involvement in production and trade is phased out, then producers will have incentives to invest in commercial farming and to raise productivity by more efficient use of factors, including existing installations and equipment.

• sustainability and a reduction in some activities that have an adverse environmental impact - steppes now cropped should revert to rangeland, some groundwater irrigation that is depleting the resource will have to cease, forest exploitation and reforestation will need to be more carefully managed. Government's role will be within a free market incentive structure, that will reduce the profitability of some marginal and erosive cropping, but which will also require increased regulation and control over public goods and common resources.

1.12 These objectives will pose challenges for service provision: research and extension will need to focus on profitability, productivity and sustainability, and on outreach to poorer farmers and to women; rural development, handicrafts and industry will require closer attention; and programs - both social and production - will need to build in an explicit poverty focus to combat rural pauperization and the drift to towns.
Chapter II - Services to Agriculture and Rural Development in an Era of Change

A. Public Services Today

2.1 Background. A broad range of services is provided to the rural sector in Iran. Government has always been dominant in these services and this dominance has increased since the Revolution with the crowding out of formerly private services in input supply, marketing and processing. In the post-Revolution era, the services philosophy followed two axes (and was not always coherent and consistent between the two). Producer services such as research, extension, marketing were harnessed to centrally determined production strategies: driven by strategic production imperatives, they worked top-down to meet national goals. Similarly, irrigation development services were planned to maximize output with little regard for economics, least-cost approach or social impacts. By contrast, rural development services had an explicit mandate to boost rural incomes and maintain the rural way of life, with a strong focus on poorer areas and populations. Liberalization is progressively replacing dirigisme and services will need to adapt, moving away from their former directive functions towards farmer-oriented support. It will be important in the transition to preserve strong points of the old orientations, like Government's commitment to maintaining rural/urban balance through its rural development program.

2.2 Current Programs and Institutions4. Services to agriculture and rural development are fairly comprehensive and professional, delivered largely by two ministries. The Ministry of Agriculture (MOA) employs about 68,000 people. Headquarters staff is relatively slim and most staff work in the provincial agricultural departments, in extension and research or in the parastatals that deal with inputs, machinery and marketing and processing. The ministry operating budget is about $70 million a year, some 1% of the total Government recurrent budget. The investment budget of about $200 million a year represents some 6% of total public investment. MOA is responsible for services to crop production. Attached to MOA are a number of parapublic bodies, notably the Agricultural Bank (AB, see Chapter V); Fertilizer Company, Plant Protection Organization, and Seed Company (Chapter V); a number of specialized crop promotion, processing and marketing agencies - Iran Tea Organization, Oilseed Research and Development Company, Cotton and Oilseed Organization (Chapter VIII); and several agroindustrial enterprises, including sugar estates (Chapter VIII).

2.3 The Ministry of Jehad-e-Sazandegi (MOJ) was created in 1979 as a movement with a mission for physical and social development in rural areas and was reorganized as a ministry in 1989/90. MOJ employs about 80,000 people. Its budget resources run around $125 million annually for recurrent costs and $400 million for investment. In 1990, MOJ took over responsibility from MOA for livestock and range, forestry and fisheries. Preparation of a Rangeland and Livestock Development Project (RLDP) for Bank financing has started; this project

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4/ This section provides only a brief summary. A full description of institutions is in World Bank Agriculture Sector Note (May 4, 1992), Volume I, Chapter III, and Volume II, Annexes 6-9 passim.
will begin to strengthen MOJ services in livestock and range management. MOJ runs a large program of rural development, including infrastructure (roads, water, village amenities, electrification), promotion of cottage and small-scale industry, and programs of popular participation and support to nomadic peoples. Attached to MOJ are a number of processing and marketing firms for fisheries, meat and dairy, and three wood industry firms.

2.4 A third public institution, the Ministry of Energy (MOE), is responsible for planning, development, and management of water resources. Fourteen publicly owned regional water companies or authorities (RWAs) reporting directly to MOE are responsible for feasibility studies, execution and subsequent management; MOE's Water Affairs Department (WAD) provides supervision, coordination and technical back-up to these water companies. The MOE employs 33,000 people in WAD and in the water companies. Budget resources were around Rls 420 billion in 1991 (US$ 280 million). The RWAs have substantial autonomy and their technical and financial management appears adequate. Partial cost recovery is practiced, and new initiatives to further decentralize to user-owned companies at the irrigation scheme level could increase user participation.

The Beginning of Change

2.5 With liberalization and structural adjustment, the reorientation of services to the rural sector has begun. Government has started to withdraw from input supply, production, marketing and processing, and input and output subsidies are being phased out (Chapter I). Parallel to this, Government has initiated a restructuring of institutions, with a reorganization of MOA and MOJ announced in April 1993 (see Appendix 1). For MOA, this entails consolidating functions and departments at headquarters, further decentralizing services to the provinces and giving autonomous status to some services, as a prelude to transfer to the private sector - including the input supply organizations, agroindustries and area development agencies. All the services dealing with economic analysis, policy and planning have been brought together in one department for programming. New departments have been created for resource utilization (land resource management) and infrastructure (water management, on-farm development). Research, training and extension have been consolidated in an autonomous agency. A new department for horticulture gives focus to development of market garden crops. The Provincial Agriculture Departments receive new responsibility for all MOA services in the provinces. For MOJ, the changes are less sweeping; a number of agencies were already outside the MOJ structure - Veterinary Organization, Forestry and Range Organization, Nomad Affairs Organization, Shillat (Fisheries Company) and their autonomous status is confirmed in the new structure.

2.6 The personnel implications of the reorganization are being worked out. No redundancies of higher level staff are expected, but there will be a process of internal reassignment and retraining. At lower levels, reductions will be effected through a hiring freeze coupled with natural wastage. The new structures are a first step towards greater involvement of the private sector and towards a more limited role for Government, with a new focus on conservation and resource management. In the future, a more radical reorganization could bring research, extension and technical services currently split between MOA and MOJ.
together in a single institution. This move is recommended later in this Study (Chapter X).

B. The Respective Roles of Government and the Private Sector

2.7 As adjustment proceeds, Government has to determine the appropriate distribution of responsibility for services between the public and the private sector. Some services belong genuinely to Government because of their public service character—policy analysis and public resource allocation, some research, extension and plant and animal protection, land and water resources management, rural development. Other services are normally better provided by the private sector. This is particularly true of production, marketing and processing activities where decentralizing decisions and creating competition usually lowers costs and increases efficiency, and where the greater mobility and adaptability of the private sector allows quick adjustments difficult to achieve in the public sector. Finally, there are some activities where public and private services can complement each other, reaching different market niches or providing stimulus through competition—research and extension, agricultural credit, technical training. The challenge in the transition is twofold: to encourage private sector delivery, and to reinforce essentially public services in a cost-effective manner.

2.8 Affordability is a key criterion. The total bill to Government for its services to the rural sector is considerable; Box 2.1 is an attempt to work out an approximate total, Rs 1.7 trillion (US$ 1.1 billion), equal to 12% of agricultural GDP and 16% of Government spending. The financing of public services is likely to change during the adjustment period: in the past, much of this cost has been financed by the "easy" subsidies that came from arbitrage between market and official exchange rates. With unification of the exchange, this facility will disappear; and public finances themselves are likely to be constrained in order to contain inflation. The cost of public services will also go up with the move to market exchange rates and with the generally high

<table>
<thead>
<tr>
<th>Box 2.1: Cost to Government and the Economy of Supporting Agriculture and Rural Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Period</strong></td>
</tr>
<tr>
<td>MOA Recurrent Budget</td>
</tr>
<tr>
<td>Investment Budget</td>
</tr>
<tr>
<td>MOJ Recurrent Budget</td>
</tr>
<tr>
<td>Investment Budget</td>
</tr>
<tr>
<td>MOE Irrigation Budget</td>
</tr>
<tr>
<td>Subsidies on:</td>
</tr>
<tr>
<td>Fertilizer</td>
</tr>
<tr>
<td>Pesticides</td>
</tr>
<tr>
<td>Seeds</td>
</tr>
<tr>
<td>Tractors</td>
</tr>
<tr>
<td>Combines</td>
</tr>
<tr>
<td>Credit</td>
</tr>
<tr>
<td><strong>TOTAL SUPPORT TO AGRICULTURE</strong></td>
</tr>
<tr>
<td>AGRICULTURE GDP</td>
</tr>
</tbody>
</table>

Source: Various, as indicated.
inflation. It is, therefore, advisable that Government prioritize its spending on the most productive programs that are of an essentially public service character, encouraging the maximum private sector delivery and trimming down programs that are less cost-effective.

2.9 Another dimension of change is human resources, in both quality and quantity. At present, many staff are taken up with control and administration functions that may either disappear or move to the private sector - MOA employs 20,000 higher level staff in input supply, agricultural production and crop marketing and processing - most of the staff of its former Farming Affairs and Agroindustry Departments (Box 2.2). A major challenge of the transition will be to manage the necessary process of reassignment, retraining and transfer to the private sector.

<table>
<thead>
<tr>
<th>Box 2.2: MOA Higher Level Staff</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Essential Public Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Research</td>
</tr>
<tr>
<td>Infrastructure</td>
</tr>
<tr>
<td>Farming Affairs</td>
</tr>
<tr>
<td>Training &amp; Extension</td>
</tr>
<tr>
<td>Agroindustry</td>
</tr>
<tr>
<td>Projects &amp; Planning</td>
</tr>
<tr>
<td>Admin. &amp; Finance</td>
</tr>
<tr>
<td>Minister's Cabinet</td>
</tr>
</tbody>
</table>

| Total: | 32,299 | 12,681 |

Source: ASN, Annex 6, Attachment 1, Table 2, Mission Figures
PART TWO - THE SERVICES

Chapter III - Policy Analysis & Resource Allocation

A. Planning and Policy Analysis

3.1 Planning Culture. Several factors have contributed to the formation of a strong planning function in Iran, which began with a seven-year plan in 1949. First, the country has a cultural tradition of strong centralized government. Second, over the last two decades the relative isolation of the country has meant an almost complete autonomy of decision making, free from external influences. Finally, despite a decade of war, resource constraints have not dominated decision making, and resources have been allocated in pursuit of policy goals rather than as a reaction to constraints. All of this gave considerable emphasis to the First Five Year Plan (FFYP 1989-93) which revived the tradition of planning at the end of the war.

National Planning

3.2 The First Five Year Plan (FFYP). The process of preparation of five year plans in Iran has been described and evaluated in the ASN. In summary, the planning system pursued under the FFYP was a highly structured, top-down system which aimed to channel resources in a predetermined way in pursuit of set national objectives. The FFYP had two principal goals: reconstruction, and self-sufficiency in strategic products. In agriculture, the FFYP represented a poor trade off between correct economic analysis based on comparative advantage and political imperatives which imposed a cereals production strategy. The ASN recommended that the next plan include more fundamental economic analysis, that more voice should be given to decentralized services and local communities, that planning for agricultural production and natural resources should be integrated between MOA, MOJ and MOE, and that MOA and MOJ should develop project appraisal capabilities.

3.3 The Second Five Year Plan (SFYP). In view of changes in economic policy and particularly the shifts of emphasis from public to private sector, the SFYP (1994-9) will have an important role as a statement of Government policy and programs for the information of the private sector, in addition to its role of allocating public resources. Preparation for the SFYP incorporates many improvements. The process started in 1992 with a statement of the macroeconomic framework and policy orientations that included unification of the exchange rate, progressive removal of subsidies and withdrawal of Government from commercial operations. These orientations are being translated into specific programs and projects through an iterative process under which local MOA services and MOJ-supported local organizations have a chance to express their views. The MOA has created a multi-department task force to steer and integrate the process and to ensure at least coordination with MOJ and MOE.

Policy Analysis

3.4 The principal institution for agricultural policy is MOA's Center for Agricultural Planning and Economic Studies (CAPES), although MOJ is responsible

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for livestock and natural resources policy. During the 1980s, policy analysis became focused on setting input and output prices, a function now being phased out. By contrast, the era of adjustment will create a greater need for policy analysis of a quite a different kind, notably assessment of comparative advantage to drive research, extension and public investment; market analysis to support the private sector and to link research and extension to markets; and socio-economic analysis to track income impacts of policy changes and service provision, to support an increased farmer orientation in services and to monitor the welfare of vulnerable or impoverished populations. The structure of CAPES, created in the 1993 reorganization of MOA, is well-adapted to meet these needs, with units for Socio-Economic Studies, Agricultural Economics and Agricultural Development Planning. CAPES is developing a work program that, in principle, covers commodity analysis, impacts of adjustment, the role of women, food security, etc. The challenge will be to keep programs relevant and focused as the field is vast and staff resources are limited.

B. Physical Planning

3.5 Institutions. Within MOA, the Agricultural Development Planning Bureau (ADPB) has been established within CAPES to correct the previous narrowly sectoral planning approaches; ADPB is responsible for all aspects of physical planning on an integrated, cross-sectoral basis with the objective of optimal and sustainable land use. ADPB has project support to develop land use planning, set up a Geographic Information System (GIS) and prepare a Comprehensive National Agricultural Planning System (CNAPS) on the basis of linear programming models. The Soil and Water Research Institute (SWRI) is responsible for resource mapping and has nearly completed coverage of agroclimatic, soil and water resources. Its work program in the next few years will concentrate on updating and standardizing existing maps.

3.6 Assessment. ADPB has hitherto been staffed by consultants and loaned staff. Lacking authority, the unit became taken up with "state of the art" technologies. Now that ADPB has been brought firmly within MOA's structure, the unit should develop more authority and consistency. A further question is ADPB's ability to achieve coordination. Links to MOJ and MOE are weak, yet linkages between crops, range and forestry and between resource exploitation and water and watershed management are vital areas for physical planning.

C. Financial Resource Allocation

3.7 The annual budget process has followed Plan objectives and resource allocations quite closely, and this risks introducing rigidity into the investment budget. However, both Plan and annual processes involve participation at many levels and proceed by iterations; and a substantial portion of the budget - about half the recurrent budget and 25% of the investment budget - is decentralized to provincial level or below.

3.8 Assessment. Budget preparation and execution procedures do not seem to constitute a bottleneck in project implementation and they provide some flexibility to carry forward resources from one budget year to the next and to use savings from one operation to the other. However, there is no overview of spending for the sector integrating the expenditures of the different ministries (MOA, MOJ, MOE). Later in this Study (Chapter X), it is recommended that a public expenditure review be conducted for agriculture to determine whether there

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is a case for increasing public expenditures in the sector, to assess the value for money of public investments and services in relation to government targets, real productivity and poverty reduction, and to highlight the proper role of government in providing public goods and services.

D. Statistics and Information

3.9 **Institutions.** Agricultural statistics are under the responsibility of the Agricultural Statistics and Information Department (ASID) of MOA. ASID works through three services: (i) the Agricultural Statistics Service (ASS), with a total staff of 180, manages annual surveys on 134,000 farms in 10,000 villages, and collects cost of production data every year on 20,000 farms; (ii) the Remote Sensing Service (RSS), with a staff of only 5 professionals, monitors land use and vegetation, and has developed a methodology for integrating the use of remote sensing into statistics; and (iii) the Data Processing Service (DPS), staffed with 22 professionals, operates the mainframe computers at headquarters and provide technical support to some 130 PCs in MOA. Statistics on livestock, forestry and fisheries are under the responsibility of the Data and Information Department of MOJ. National statistics are compiled by the Iranian Statistical Center (ISC) which organizes an agricultural census every ten years. The last agricultural census was conducted in 1988. ISC has begun to publish annual statistics on agriculture (first year 1992) which basically duplicate ASID publications.

3.10 **Assessment.** The biggest problem is coordination. In statistics, data originating from the ISC and from ASID are often contradictory. Production estimates by ISC are usually lower than those of the ASID. The Integrated Informatics Plan (IIP) which MOA is developing may help resolve this problem. IIP will collect, store, analyze and make accessible agricultural information through a nation-wide computer network linked to a central server. The IIP is expected to result in sector-wide improvement in cost effectiveness of information management; improvement of cooperation among MOA departments; and increased efficiency in computer use through systematic training of MOA staff. In remote sensing, several institutions are developing uses in parallel. What is needed is a master plan and coordination from a single lead institution within Government. Within a coordinated framework, there is a scope for investing in equipment and training for RSS. Finally, there is a need for some new staff, particularly in remote sensing, and for training and new equipment for statistics, remote sensing and the IIP.

E. Economic & Social Monitoring

3.11 The principal economic monitoring tool is the ISC annual household income survey conducted on 10,000 households. Monitoring of special target groups is carried out by MOJ (nomadic peoples), by MOA's CRRAE (socio-economic studies) and the PBO (deprived areas monitoring). The methodology for poverty assessment, monitoring and evaluation which has been developed for special groups and areas should be improved to cover other forms of poverty (rural poor outside deprived areas, landless farmers, etc). This could become a powerful tool to prepare a program of policy reforms, public expenditure, and institutional development to reduce poverty in rural areas.
3.12 **Project Monitoring.** In principle, all public sector projects are appraised and subsequently supervised according to norms established by PBO. In practice, neither MOA nor MOJ has a project appraisal capability. Implementation of MOA projects is monitored on a sample basis by its Evaluation and Supervision Department. Ex-post evaluation is not adequate and should be strengthened through improved methodology and training and sub-contracting to independent consultants. The evaluation of the impact of sectoral policy does not seem to be done systematically. However, the CRRAE has done some ad-hoc studies - for example, a recent study of input use and production in relation to agricultural research.

F. **Issues and Proposals**

3.13 Structural adjustment will change the nature of demand for planning and economic analysis. The increased role for the private sector and the process of decentralization will reduce the role of central planning and underline the private sector's need for information on Government policy and investment programs, on market prospects, etc. The decline in Government's share of resources and its reduced role in the economy will create a demand for more rigorous analysis of public spending. The emphasis on comparative advantage as the determinant of policy will create a strong demand for skills in economic analysis. Finally, the stresses of the adjustment process and the introduction of targeted interventions to help the poor will call for more socio-economic monitoring and poverty analysis.

3.14 Public institutions are at present poorly equipped to meet the changing demands. Microeconomic tools (cost-benefit analysis, linear programming, etc.) are relatively well mastered but improvements are needed in: the analysis of commodity chains (using DRC techniques); in project appraisal and supervision; in socio-economic monitoring; and in a range of planning tools like remote sensing, GIS, mapping, agricultural statistics and informatics. Finally, support is needed for the decentralization of the planning process to the provinces, which is an objective of the SFYP.

3.15 All this creates a rich agenda for support with a focus on: human resource development, equipment, and the implementation of key projects - GIS remote sensing, policy analysis and monitoring, and project evaluation and the IIP. The policy and institutional preconditions to this support would include:

- better integration of planning and resource allocation functions for the rural sector - a start should be made with the ADSB physical planning function, which should bring together planning for MOA, MOJ and MOE, and with a public expenditure review covering the expenditures of the three ministries.

- a master plan for remote sensing.

- a rationalization of the allocation of responsibilities for agricultural statistics - ISC could be responsible for the ten year census and ASID for annual statistics.

2/ This should be part of a more general "information culture" within MOA - see Chapter X (para. 10.8).

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Chapter IV - Farmer Information

A. The Farmer Information System

Background

4.1 Research, extension and training in Iran have a long and reputable tradition. Some momentum was lost during the war years but government commitment was renewed in the FFYP and the services are expanding. Virtually all agricultural research, extension and training are provided through public services - the private sector has little incentive as Government dominates input and output marketing. The division of tasks between MOA and MOJ is under review. The services do have an impact: farmers who benefit certainly achieve higher yields, but these are generally the larger farmers who have had priority in Government's food production strategy. There has been little emphasis given to special segments of the farming population like poor farmers or women, although this is now beginning. Commitment within the system is high - for example, courses in extension are an integral part of the agriculture curriculum in Iranian universities and scientists show a high level of dedication.

The Challenge for the System

4.2 Crop yields improved moderately over the last decade (see Box 4.1), with bigger increases for irrigated crops than for rainfed. Much bigger increases were achieved by a small number of larger farmers. In general, yields are low by international standards. Part of the reason for this lies in the policy context in the 1980s - distorted incentives, lack of investment in infrastructure, absence of private sector initiative.¹ For some rainfed crops, average yields actually fell as subsidies encouraged cropping on more marginal lands. But there are also significant issues facing research and extension - notably the generally "top-down" culture, the bias towards crops seen as priority by Government, and the lack of cooperation between institutions.

Box 4.1: Changes in Yields during the 1980s

<table>
<thead>
<tr>
<th></th>
<th>1982-5</th>
<th>1986-90</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Irrigated</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>1.75</td>
<td>1.97</td>
<td>+13%</td>
</tr>
<tr>
<td>Barley</td>
<td>1.85</td>
<td>2.08</td>
<td>+14%</td>
</tr>
<tr>
<td>Rice</td>
<td>2.98</td>
<td>3.51</td>
<td>+18%</td>
</tr>
<tr>
<td>Legumes</td>
<td>1.13</td>
<td>1.12</td>
<td>0%</td>
</tr>
<tr>
<td>Potatoes</td>
<td>13.15</td>
<td>12.54</td>
<td>-5%</td>
</tr>
<tr>
<td>Onions</td>
<td>16.24</td>
<td>22.19</td>
<td>+37%</td>
</tr>
<tr>
<td>Beet</td>
<td>23.58</td>
<td>25.75</td>
<td>+9%</td>
</tr>
<tr>
<td>Cotton</td>
<td>1.73</td>
<td>1.94</td>
<td>+12%</td>
</tr>
<tr>
<td>Fodder Crops</td>
<td>6.67</td>
<td>7.52</td>
<td>+13%</td>
</tr>
<tr>
<td>Oil Crops</td>
<td>1.39</td>
<td>1.86</td>
<td>+34%</td>
</tr>
</tbody>
</table>

| **Rainfed**  |        |         |          |
| Wheat        | 0.62   | 0.66    | +6%      |
| Barley       | 0.76   | 0.66    | -13%     |
| Legumes      | 0.44   | 0.44    | 0%       |
| Potatoes     | 6.59   | 7.92    | +21%     |
| Onions       | 6.10   | 8.59    | +25%     |
| Cotton       | 1.11   | 1.27    | +14%     |
| Fodder Crops | 6.10   | 5.30    | -13%     |
| Oil Crops    | 1.36   | 1.05    | -23%     |

Source: ASN II, Annex 3, Table 10.

1/ See ASN passim, but especially para 5.02
4.3 Yet the potential is considerable and current policy adjustments should create the right environment to exploit it. For the smallholder, despite limited resources, there is scope to increase income from both on-farm and off-farm activities. Larger farmers can reduce production costs, make better use of inputs and manage natural resources sustainably. The challenge is to reorient the information system to meet farmers' changing needs as the development of markets creates choices. Changes in the economy and society create challenges, too. The growing population, land fragmentation, increased off-farm employment, a more important role for women increase demand for information of a different kind. The rising level of education and improving communications create new possibilities for delivery.

B. Agricultural Research

4.4 Structure. Almost all practical agricultural research in Iran is conducted by MOA and MOJ. Research at the universities is associated with post-graduate training and tends to be of a basic nature. There is virtually no privately funded research. At the beginning of 1993, the Government research establishment comprised: nine central research institutes responsible for basic and applied research (five MOA, four MOJ, see Box 4.2) and 26 provincial research centers and 80 substations responsible both for execution of trials on behalf of the research institutes and for adaptive research for the province. There are about 3,600 staff employed in the central institutes (MOA 2,100, MOJ about 1,500) and about 7,600 staff in the provincial centers and substations (MOA 4,644, MOJ about 3,000). The research institutes and the provincial research centers report directly to the Deputy Ministers responsible within MOA (Deputy for Research, Extension and Education) and MOJ (Deputy for Education and Research). The MOA Deputy Minister maintains a research secretariat, the Agricultural Research, Training and Extension Organization (ARTEO), responsible for research strategy, and for approving, financing and monitoring research programs. Within MOJ, a Research Commission of ministry staff prioritizes and vets programs before presentation to the MOJ Research Council, which includes representatives from the universities and from the MOJ Training and Extension Department.

4.5 Resources. Public expenditure on agricultural research in 1992 was Rls 62 billion (US$42 million, Box 4.3), equivalent to 0.5 percent of agricultural GDP, which is low for a country with Iran's resources (the international norm is 1-2%). The size of the system in terms of infrastructure and number of researchers is appropriate to the size and state of development of the sector. The recurrent budget appears adequate and is well balanced between salaries (60%) and research operations (40%). Maintenance of buildings and equipment is good but libraries are not always adequate or up to date. Investment funds are insufficient; all installations visited need improved facilities. Laboratories have been well

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2/ In 1993, both MOA and MOJ created additional research institutes with quite narrow remits. MOA set up a Dryland Farming Research Institute (at Maraghe), a Pistachio Research Institute (at Rafsanjan) and a Rice Research Institute (at Rasht). Plans are afoot to create three more commodity research institutes for olives (at Rudbar), for dates (at Ahwaz), and for citrus (at Ramsar). These creations are part of a policy to move towards commodity specialization in the central institutes. Some staff and financial resources will come from existing institutes. Some will be additional. MOJ has created a new institute for watershed management research.
equipped but much of the equipment is old or obsolete. At the more remote stations, facilities and accommodation are inadequate. Vehicles and agricultural equipment generally need to be replaced. Staff are generally well qualified and dedicated; however, there was significant loss of staff in the 1980s, which has resulted in a shortage of experienced staff at the middle level. There is a surplus of unskilled labor at lower levels. Staff morale has suffered from the erosion of the value of public sector salaries, and is particularly poor in the more remote stations.

4.6 Research Programs. Most activities of the system are at the basic/applied end of the research spectrum (basic research consumes 60 percent of the budget). Most research results are thus only of marginal practical value, although some have made a real impact - HYVs for rice, wheat and sugar beet, drip irrigation for citrus and dates. The bias towards basic research results from the top-down programming by the central institutes. The provincial research centers have begun to overcome this bias by setting up Provincial Agricultural Research Consultative Committees (PARCCs) and by carrying out demonstration trials on farmers' fields jointly with the extension service ("Joint Projects").

4.7 Evaluation. The strong points of agricultural research in Iran are its basically sound infrastructure, facilities and staffing. Research carried out is generally well planned and executed. Points that require attention are:

(i) the content of research, which is biased towards academic topics and centrally determined priorities, not the real needs of farmers. The reasons for this bias include:

- a largely technology-transfer, commodity-based approach that can cause neglect of diagnosis of real farmer problems, the integrated nature of crop and livestock systems, and comparative economics at the farm level
- absence of farmer involvement in the system

The Joint Projects have begun to bring research and extension together; much remains to be done, however, to improve technical standards and make the trials useful to farmers. Above all, more farmer involvement in design and execution is essential.
Box 4.2: Agricultural Research Institutions

**MOA Agricultural Research, Training and Extension Organization**

189 research staff, headquarters within MOA in Tehran, responsible for planning, financing, monitoring and evaluating the research program for all of Iran; controls research budgets, approves research strategy and programs for Central Institutes and the Provincial Centers. The organization includes an economics bureau.

**MOA Central Research Institutes**

<table>
<thead>
<tr>
<th>Department</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agric. Engineering</td>
<td>15</td>
</tr>
<tr>
<td>Soil and Water</td>
<td>270</td>
</tr>
<tr>
<td>Sugarbeet</td>
<td>200</td>
</tr>
<tr>
<td>Seed and Plant Improvement</td>
<td>328</td>
</tr>
<tr>
<td>Pests and Diseases</td>
<td>223</td>
</tr>
<tr>
<td>MOA Livestock</td>
<td>38</td>
</tr>
<tr>
<td>Forestry and Range</td>
<td>500</td>
</tr>
<tr>
<td>Animal Diseases and Vaccines</td>
<td>70</td>
</tr>
<tr>
<td>Fisheries, Research and Training Organization</td>
<td>7</td>
</tr>
</tbody>
</table>

MOA also runs a Center for Agricultural Planning and Economic Studies (CAPES). CAPES has 96 staff, is based in Tehran and reports to the Planning Deputy Minister.

# Livestock
38 scientific staff, headquarters in Karaj, five departments: Cattle & Buffalo, Sheep & Goats, Poultry, Bee Keeping, and Feed & Feeding; research on local breeds of sheep and cattle, and on feeds.

# Forestry and Range
500 staff, headquarters in Karaj, responsible for wood testing and for research on rangeland regeneration and afforestation, soil and water conservation, and range productivity.

# Animal Diseases and Vaccines
The "Razi Institute", 70 scientific staff, responsible for vaccine production and epidemiology research.

# Fisheries, Research and Training Organization
Seven research centers headquartered in Tehran (100 staff), responsible for Fisheries research and training.
lack of effective links with extension and the technical departments of MOA and MOJ
• absence of links between market opportunities and the choice of research topics
• a programming system that begins at the top
• lack of contact between professionals in different institutes
• lack of a national research policy or master plan

(ii) separation of crops research from livestock and forestry research, which is undesirable and wasteful. Animals are part of the farming system. Since the 1990 reorganization between MOA and MOJ, some forage research is undertaken by MOA.

(iii) the management of research and control of its quality - both ARO and the central institutes in some sense "control" the programs of the provincial research centers but the system for deciding priorities and approving programs is unclear. Management systems are not computer based and there is no system of formal external review of research programs and results.

(iv) the human resource base, which is good at the top, thin in quantity and quality in the middle, and oversized at the bottom. In-service and external training are no more than adequate and there is little overseas training. As the old cadre of researchers trained before the Revolution retire, the middle level staff will be poorly equipped to take over. In addition, incentives are becoming inadequate to attract and keep bright researchers. At the bottom, the plethora of unskilled staff drain resources away from productive uses.

(v) the monopoly of the public sector - virtually all research is done by public institutions and paid for by Government. Government has not contracted out research tasks to private institutions either. Research by non-Government institutions could help introduce a market-drive into the research agenda and create efficiency through competition. Private funding could ultimately begin to reduce the cost to the exchequer.

(vi) physical facilities - much equipment is reaching the end of its useful life and there is a need to upgrade and modernize. Libraries and information resources need particular attention.

Recommendations

4.8 Change in any set of activities and institutions as large and complex as those concerned with agricultural research in Iran is a major challenge. Certainly change will be gradual. The biggest change that is recommended is that research (and extension with it) move towards a farming systems approach (FSA). FSA brings research, extension and farmers together to analyze local farming systems constraints and to generate a research and extension agenda tailored to the needs of specific localities. In Iran, the seeds have been sown with the Joint Projects. However, this beginning has been quite weak and it will be
Box 4.4: Private Role in Agricultural Research

Worldwide, public institutes, universities and international agricultural research centers dominate basic research. Private firms and non-profit organizations display greater participation in applied research. Since private sector research is dictated by the potential economic returns from the research activity and the appropriability of those returns, private sector participation can be promoted by enhancing the factors that improve these preconditions. These factors include: a liberalized input and output marketing regime that allows scope for profitable production, processing and commerce on a large scale; a policy of cooperation that makes public research available to the private sector; and a legal framework, including intellectual property legislation, that allows private firms to make a return on their investment in research. The right enabling environment could also encourage the import of technology by multinational firms.

Basic and managerial research and applied research in crop and livestock production, and the agricultural machinery and chemical industries where firms cannot keep the results for their own profit, will not generate sufficient economic incentives for private sector research. Some research will thus always remain in the public hands. But research can be contracted out to private firms, universities or non-Governmental organizations.

Adapted from: Public and Private Sector Roles in Agricultural Research (World Bank Discussion Paper No. 176).

essential to devote substantial professional management to FSA if it is to be a success. With this fundamental shift, the following actions are recommended in the short-term (within three years):

(i) **clarify the mandates of the various institutions**, to take advantage of the comparative advantages of each. Research substations are the frontline for FSA. With farmers and extension, they should conduct diagnostic surveys, demonstration plots etc. The regional research centers should back up the FSA fieldwork with regionally relevant applied and adaptive research in conjunction with extension. The central research institutes should concentrate on basic and applied research on a commodity or factor basis on nation-wide problems; they should conduct research on components of the farming system (economics, agronomics, zootechnics, technology), and be responsible for coordinating component and thematic research by different institutions on specific commodities. Finally, they should give technical support to the regional research centers.

(ii) **work out a means of practical collaboration between research programs**, from planning on through implementation. A major recommendation of this Study (Chapter X) is that the producer services of MOA and MOJ, including research, should be fused. This proposed institutional framework needs to be put into practice by collaboration between institutes at all levels through joint policy and master plan
formulation and joint annual programming (see below), through the PARCCs and through practical fieldwork together, for example in the Joint Projects.

(iii) **prepare a research policy and master plan**, giving full weight to farmers needs, and **interpret the master plan through annual programs**. The policy should specify the system for setting research priorities; and spell out the mechanism and criteria for selecting research topics.

(iv) **reinforce links with the IARCs**, which have a research capacity well beyond the reach of national resources. Some basic research currently being carried out could probably be borrowed from the IARCs. A specific institute should be made responsible for relations and programs with each IARC.

(v) **improve research management and quality control**, by introducing computer-based management information systems and setting up a formal external review system of both the quality of research in progress and the efficiency of management.

(vi) **invest in human resources**, with a human resources development plan, covering training and career development, and dealing with the excess unskilled labor. In the short term attention should be given to improving conditions for staff away from Tehran or provincial capitals, and to training, including overseas training. In the longer term, consideration should be given to an independent legal status for research institutions that would allow better salaries.

(vii) **encourage private sector research**. Liberalization of input supply and output marketing should create increasing opportunities for private research (see Box 4.4) and Government should encourage this by providing the legal framework for protection of intellectual property and by actively promoting collaboration between public and private sectors, including the sharing of public sector results with the private sector and contracting out certain analyses to help develop private laboratories. A research grant system should be introduced to finance private, university and other non-Governmental research.

(viii) **upgrade facilities**. This would require an investment program to replace and upgrade laboratory equipment, machinery and vehicles, to acquire computers, to complete some installations and to build up libraries.

4.9 **Carrying out these recommendations would require sustained commitment from decision-makers**, participation of staff at all levels, and financing for investment, technical assistance and studies. If the changes can be successfully made, research would be more oriented to farmer needs, and better able to respond to the demands of integrated and sustainable resource management at both macro and micro levels. Results would be better linked to economic realities - notably

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1/ Research grant schemes are running in several countries including Indonesia, Bangladesh and Kenya.
comparative advantage and market opportunities - and to socio-political
priorities such as the productivity of small farms, rainfed cropping and the role
of women in farming. A major shift from emphasis on irrigated largeholdings
towards the rainfed smallholdings end of the farmer spectrum will result. This
matches not only farmers' needs and economic logic - the least-cost productivity
gains are concentrated here - but also social policy of increasing incomes for
the mass of rural people.

C. Agricultural Extension

The System

4.10 Agricultural extension is conducted by MOA and MOJ. MOA is responsible for
all services related to crops, including forage, and to on-farm water use,
employing about 3,000 extension staff, mostly in the provinces. Extension for
certain industrial crops is provided by specialized agencies reporting to MOA
-Iran Tea Organization for tea, Cotton and Oilseeds Organization for cotton and
edible oils - or by quasi-autonomous industry bodies - Oilseed Research and Development Company for edible oils, the sugar companies for sugar.
At field level, MOA extension is organized from the 800 Agricultural Service
Centers (ASCs) which in recent years have focussed mainly on managing the allocation of
inputs (Chapter V) and on providing extension - the policy now is to shift the main emphasis to
extension. MOA extension staff are quite well-qualified - about one third are graduates and
most of the rest are agricultural high school graduates (Box 4.5). There is no evident
resource constraint - MOA allocates over half its recurrent budget to extension and the ASCs
(Box 4.6). Extension methodology is based on a transfer of technology model: messages
generated by research are delivered to farmers by training sessions in the ASCs, on-farm
demonstrations and contacts with selected "key" farmers, and through the mass
media (radio, television, magazines). MOA maintains continuous contact with
27,000 "key" farmers who are used as local leaders. Other farmers benefit on an
occasional basis and MOA estimates that it reaches indirectly 1 million farmers
(one-third of the total) through demonstration plots. Development of extension
is a priority for MOA. Over the next ten years, MOA plans to expand the ASC
network and triple the number of agents, to 9,000, reassigning staff from control
and allocation functions that are becoming redundant.

4.11 MOJ is responsible for all services related to livestock, rangeland,
forestry and fisheries. MOJ inherited a small livestock extension system when
the Livestock Affairs Department was transferred to its jurisdiction in 1990

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5/ Field staff of these agencies are responsible mainly for arranging
contracts with farmers and input supply. In the case of cotton,
oilseeds and sugarbeet, MOA staff now provide technical advice.
MOJ also provides extension through its Extension and Popular Participation Department. The Department has privileged access to village life through the 35,000 Islamic Rural Councils, and is in the process of establishing specialized outreach centers: 3,000 "village centers" provide a base for extensionists; 200 "extension houses" established to date provide more elaborate facilities. MOJ has about 1,000 employed agents split between the Livestock Affairs, Forestry and Extension Departments. In addition, MOJ’s watchword of popular participation is reflected in its program of rural extension agents (about 5,200), volunteers who are at present involved mainly in animal health. Community mobilization for common activities, cooperative development and an integrated approach to rural development are further facets of MOJ’s extension philosophy (see Chapter VII). MOJ is keen to develop its extension services and reinforcement of the livestock extension service is foreseen under the proposed Rangelands and Livestock Development Project (RLDP) as part of a proposed unified crop/livestock extension program. Development of a nationwide extension system is the subject of a major MOJ study launched in 1990 and to be completed by mid-1994.

### Evaluation

4.12 There is a relatively small extension establishment in Iran - MOA agents are 1:1,500 farmers. MOJ’s volunteer animal health agents are more numerous - about 1:600. Technical specialist staff are few and lacking in training. Both ministries see scope for expansion of activities, but before further investment in the system there are some issues which should be considered. Of these, the most important is the **overall organization of extension.** At present, there are overlapping responsibilities between MOA and MOJ for extension - and some important gaps (notably animal husbandry, range management). Working exchanges and pooling of resources are infrequent, and there is no chance of an FSA approach based on a farmer’s whole production system and natural resource management. Both MOJ and MOA extension approaches have strong points - in MOJ’s case, its philosophy of encouraging participation, in MOA’s case a stronger technical track record. If these strengths could be combined, Iran could have the institutional basis for effective public extension. A related question is the existence of specialized agencies for industrial crops independent of the regular extension effort.* In general, specialized extension is an appropriate approach for specialty or integrated industrial crops (see Box 4.8). The existence of autonomous extension can provide a degree of competition that should promote efficiency, but this needs to be set in a context where farmers are able also to

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* There is a proposal, too, to create a specialized public horticulture extension service.

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<table>
<thead>
<tr>
<th>Box 4.6: MOA Extension Budget 1991/2</th>
<th>Share of Total MOA Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrent Extension</td>
<td>16.2 (29%)</td>
</tr>
<tr>
<td>ASCs</td>
<td>12.4 (22%)</td>
</tr>
<tr>
<td>Investment ASCs</td>
<td>14.3 (9%)</td>
</tr>
<tr>
<td>Total</td>
<td>42.9</td>
</tr>
</tbody>
</table>

US$28.5 million

Source: ASN II Annex 6
get advice on overall farm management and systems from general extension that will allow them to choose between crops. Otherwise, competing extension will only provoke confusion.

4.13 MOJ's field extension activities are still in the early stages. MOA's extension service has a longer track record, from which the following issues emerge:

- **the system is supply driven**, conceived as the delivery of messages from the center to the farmer. This can be an effective means to transfer technology to larger farms growing a few main crops but is not well-adapted to smaller, mixed farms (see Box 4.8). This "supply drive" became very pronounced during the Iran/Iraq War, when programs were determined with little farmer participation. Extension became focused on very few crops and producers, and extension workers spent a lot of time in the office administering production contracts and allocating subsidized inputs. In the last few years, the service has made a big effort to improve its farmer orientation and outreach.

- **extension methodology should be reassessed.** The MOA extension service works primarily through "key" farmers who should set examples for other farmers to follow. Results have been mixed because the packages transferred have largely focused on large-scale cereals cultivation, whereas most farmers have only small fragmented farms.

- **MOA extension has been biased in favor of a small section of the farming community.** In addition to equity concerns, this approach can be faulted economically, as the highest yielding and least-cost improvements are available at the smallholder end of the farmer spectrum.

- **organization and management are inadequate.** Extension staff are relatively well-qualified but they have no clear objectives. Training in both technical matters and in management is weak. Incentives have been eroded by inflation.

**Recommendations**

4.14 Government should move progressively towards an FSA approach in research and extension. At present, MOA is pursuing the general extension approach (Box 4.7), with some agencies pursuing the commodity specific approach. It is more difficult to characterize MOJ extension: livestock and forestry extension, such as they are, could be described as commodity specific, while the community development programs most resemble the participatory approach. The MOA approach was well-adapted to Government's drive to increase output on relatively homogeneous large irrigated farms, where standard technologies could be applied. In future, the challenge will be to assist the vast mass of small heterogeneous mixed farms, and here FSA is the best-adapted approach. Introduction of FSA could be combined with a test of the possibilities of cost sharing, and also increased participation of the universities in field extension programs (see Box 4.8). Over the next five years, this could translate into an operational plan as follows:
Box 4.7: Extension Approaches

The General Approach transfers technology "top-down" to rural people. Implementation uses demonstration plots, visits to individual farmers, farmers' meetings and tours, supported by radio, posters etc. This approach is easy to control and gives rapid communication from the center to rural people, but it lacks two way flow of information, fails to adjust messages to localities and is expensive because it needs a large staff. Since the messages are often inappropriate, their impact is low. Smaller numbers of more competent staff - or people recruited locally who know the area - would be more cost effective; but a centralized system discourages such innovation with personnel management.

The Commodity Specific Approach aims to increase production of a particular commodity by providing a complete service package. Program planning is controlled by the commodity organization, implementation is by instructions given to farmers. The technology tends to fit the production problems, and therefore the messages are appropriate. Research and marketing are coordinated. The approach can be cost-effective because of the focus on a narrow range of technical concerns, the higher salary incentives for personnel, closer management and supervision, and fewer farmers for each extension worker. This approach does not deal with other aspects of farming.

The Training and Visit Approach is highly disciplined - fixed schedules for training of extensionists by subject matter specialists and for visits to farmers by extensionists. Links between research and extension are reinforced, extension is unified in a single service. Communication is in two steps: the extensionist works with imitable contact farmers, who then spread the messages to others. Efforts are concentrated on the most important crops and practices. The approach is "top-down". Advantages are a unified service, field orientation, regular training. If simple low-cost technology is available, this approach can have a big impact. The disadvantages are the high long-term costs and lack of two-way communication.

The Participatory Approach emphasizes participation by research, extension and farmers, and covers a broad range of subjects determined by farmers' expression of their needs. The system assumes that farmers have much wisdom about their farming, resources and constraints, and that learning is best carried out in groups and by empirical means. Programming is controlled locally, farmers' associations are active. Extensionists need to be educators, animators and catalysts. The approach is generally low cost and leads to the growth of structured local groups. The advantages are good fit with needs, low cost, good cooperation and motivation. Disadvantages are that it appears slow, and it is difficult to plan and control - both of which make such programs vulnerable politically.

The Farming Systems Approach (FSA) assumes that technology is not available and should be generated locally by cooperation between research, extension and farmers. Each program is holistic - i.e. takes account of all factors in the farming system - and is specific to each locality. The advantages are good fit, good extension/research/farmer cooperation, good farmer commitment. Disadvantages are high cost, slow pace of development, and difficulty of introducing such a change of culture. Monitoring, planning and control are hard.

Adapted from: Alternative Extension Approaches by George Axinn, FAO 1988
(i) create "demand drive" and improve the relevance of extension

- help farmer organizations to develop as the "farmers' voice"
- invite farmers and research to participate in planning, implementing and monitoring of extension programs
- use diagnostic and rapid rural appraisal techniques to improve diagnosis of farmer problems (jointly with farmers and research)
- orient programs towards the needs expressed
- deliver programs by the highest-gained and least-cost medium (using radio, television, videos, "hot-line" phone-in facilities)
- consider testing user fees as signals of demand

(ii) improve the motivation and efficiency of extension staff

- draw up objectives and terms of reference for extension, and job descriptions for staff
- carry out a skills gap analysis and develop a training plan, including training of trainers
- open up career development paths

(iii) get effective strategic leadership

- prepare an agricultural information policy defining the role of public and private sectors
- take top level decisions about the organization of extension, the resources to be allocated, the media to be adopted for different programs
- begin bringing in other public and private institutions to respond to farmers' demands
- create an extension support group that would develop ideas, conduct training, back-up field staff

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7/ Demand can only arise in the context of choices, and the relevance of "demand drive" will increase with the progress of liberalization in the sector.

8/ There is about half an hour of rural radio per day and one and a half hours of rural television per week. There are 2.1 million telephone connections in the country (one for every 23 people).
4.15 As in the case of research, the question of the MOA/MOJ split has to be faced. There is a strong logic for the reunification of the technical, production-oriented parts of the two extension services, especially as this would give a strong impetus to FSA, and this reunification is a major recommendation of this Study (Chapter X). In this process, it would be important to preserve MOJ's bottom up participatory approach. The community development aspects of MOJ extension should perhaps be handled by a separate extension force built on MOJ's cadre of locally recruited agents. This could form the foundation of a "community development extension force" closely integrated with MOJ's rural development activities. As a first step, MOA and MOJ should work together to develop the recommendations above through a joint process of study and discussion (MOJ's ongoing study would be a useful input to the process). The findings could be discussed at a national conference, leading to an agricultural information policy for Iran, and an action and investment plan for five years, which could form the basis of project preparation for different donors.

D. Women, Extension and Agricultural Services

4.16 Women in Farming. Women provide about half the agricultural labor input overall. It has been estimated that nationally women provide:

- about a quarter of the labor for post-planting crop production
- over 80 percent of labor for post-harvest processing
- about 40 percent of labor for feeding and cleaning out livestock
- 80 percent of labor for milking and processing milk products

The nature and the extent of the input varies considerably between regions and economic systems: rice areas and livestock systems have the greatest involvement of women. In marginal areas, where handicrafts are an essential element in household viability, women provide around 90% of the labor for all handicrafts and hence their economic power and role in decision taking is greater. Where farms are smaller, women tend to do more of the farm work and consequently have a more important role in decision-making. Few women are heads of farming households or members of cooperatives. Women's access to credit is quite limited. Most loans that go to women are for carpet weaving and other handicrafts.

4.17 Trends. Two changes are taking place in women’s involvement in agriculture as the structure of the sector evolves. On smaller, less viable family farms, women’s participation is increasing as men move into off-farm employment. Increasing numbers of de facto female farm managers could be the long-term result. On larger farms, there is a trend in the opposite direction, less field work for women as agriculture is mechanized. On these larger farms women are moving more into off-farm income-generating activities.

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2/ In marginal areas households can only stay on the land if the women do handicrafts. MOJ estimates that up to 75% of household income in desert and mountainous areas comes from carpet weaving.

M:\IRAN\IRAGS\CHAPTER.4C
Support Services for Women

4.18 MOA Programs. Growing attention to women's issues is being paid by the government. An Office of Women's Affairs was established in the President's Office in 1992. MOA restarted extension to rural women in 1986 and now within the Extension Department has the Rural Women's Training Program (RWTP) with 60 female extension staff (2% of MOA's extension agents); quality is high -- all have university degrees. RWTP works exclusively with women. RWTP coordinators have been appointed at headquarters and at provincial level. RWTP is concentrated in Gilan, Mazandaran and East Azerbaijan where women are important in agriculture. There are annual RWTP workshops - at the first, the Deputy

Box 4.9: The Economic Justification for Services Targeting Rural Women

In developing countries women play an important role in agriculture. In the past, agricultural services have generally been designed by men and delivered to men. Over the last two decades, more attention has been paid to the roles played by women within farming households and to the different characteristics of male and female farmers. Men and women who farm differ in three major respects. Men and women face different farming constraints. Compared to men, women have greater constraints on their time due to their multiple responsibilities on and off the farm; they have less access to education; less control over the factors of production, land and money; and less access to support services like training, extension and credit. But women are not merely resource-poor versions of male farmers. Men and women undertake different farming operations: frequently they have different tasks, grow different crops or keep different livestock, and have different income-generating activities. Current modes of delivery of services are often not equally suitable for men and women. For example, some cultures restrict interaction between male agents and rural women; women are less able than men to leave home for meetings; women are occupied with the household in the morning when extension meetings are usually held; and women are less likely to be literate and to speak the official language.

Studies in Africa have shown that female farmers have higher yields than men at the same levels of inputs. However, the disadvantages under which women operate constrain their productivity and reduce output. One study found that if women were to apply the same volume and quality of inputs as men now do, their productivity would increase by 20%. Rural women and rural poverty are linked. Assistance to women will improve their productivity, alleviate rural poverty, and be a worthwhile investment for a nation.


Minister of Agriculture underlined the ministry's commitment to training women. MOA is also trying to integrate women's considerations into regular programs and has started a radio program for rural women. MOA wants to expand its women's extension effort, with the target of having male and female staff in proportion to men's and women's agricultural activities within five years. A start is being made under the IFAD extension project which provided for a large increase in the number of female agents and the establishment of training centers for rural women.
4.19 MOJ Programs. Although rural women are overwhelmingly responsible for poultry production, milking and milk processing, MOJ extension for women is confined to silkworm rearing and handicrafts. MOJ apparently intends to correct this, and is setting a target that within five years (the end of the SFYP period) at least 30% of clients for MOJ extension should be women. MOJ plans to give priority to livestock training for women and to residential training in both home economics and production themes.

Evaluation and Issues

4.20 Women’s involvement in farming and the markedly different characteristics of many women’s farming activities justify research and extension addressed to women’s activities. There are cultural and socio-economic constraints on women receiving training or extension through the regular male-organized delivery system, and this would argue for the kind of women-focused program that MOA is setting up. MOA’s commitment to extension for women is thus justified and worth encouraging, as are MOJ’s proposals for the future. Trends towards more female participation in farming, and to a growth in the importance of off-farm activities in which women often predominate, underline the importance of these developments. However, there are some areas that deserve attention:

(i) data are inadequate to define and focus a women’s development program. There is very little hard information on women in farming that would allow definition of the specific research and extension agenda. A better information base is essential for programs like RWTP to have maximum efficiency.

(ii) the programs need to be prioritized. Resources are scarce and programs should focus on groups with particular potential and needs. Elsewhere in this Study the fusion of MOA and MOJ research and extension is recommended, and this would allow better definition of priorities. These are likely to include: (i) independent female farmers everywhere; (ii) livestock and dairying extension country-wide; (iii) women on small farms in those regions where women play important roles in crop production; and (iv) extension on off-farm activities in marginal farming areas.

(iii) research is needed. There is no research agenda on women’s activities, and no gender awareness in the research establishment.

(iv) RWTP extension methodology needs to be improved. MOA’s extension to women demonstrates the same top-down, transfer-of-technology approach and lack of critical analysis as in the extension service generally. Extension outreach is generally by low-gear contacts.

(v) technical training is non-existent. There are currently no training facilities open to women below degree level. Hence there is no source for technical level staff, nor training for rural women or girls.
Recommendations

4.21 There are several areas where an adjustment in policy could provide a relatively quick and cheap impetus to Government's efforts towards women. These efforts could be summarized as mainstreaming efforts to help rural women. Examples are:

- promote women to the positions they deserve - at present, female staff in MOA and MOJ lack authority.
- spread the net wider - while the government was right to concentrate initial efforts in the Caspian area, there is a lot of potential in other areas.
- recruit women at all levels - at present, there is a big gap at the technician level.
- adapt training centers to train female staff or young rural women for part of the year when they are not otherwise used.

4.22 There are also some specific priority programs that need to be undertaken in the near future:

- improve the data base - this can be done by specific studies and by ensuring that gender analysis is written into the terms of reference of all relevant studies (e.g. the upcoming rural finance study, Chapter V).
- improve training for women. This should include: (i) residential training facilities for female staff and rural women; (ii) more female students doing agricultural studies at universities; (iii) overseas training, workshops, international networking, publications for female staff; and (iv) training facilities for married rural women, with training courses broken into small modules and taken to the village.
- factor women into research and extension, by working up from diagnostic surveys to a relevant research and extension agenda that includes women's activities, and by testing highly-g geared delivery mechanisms like television.

E. Technical Training

4.23 In Iran, where there is a shortage of skilled labor in all sectors, public and private, technical training is important. However, such training is expensive - unit costs are higher than for all other pre-university programs. Generally, the immediate users - the nation's farm enterprises, agriculture-related businesses and public services - are in the best position to provide this kind of training, or at the least, to be involved in design and implementation.

19/ Scholarships could be provided to female rural high school graduates on the condition that they return as agricultural extension agents.
4.24 After eight years at school, boys\textsuperscript{11} can opt to specialize in agriculture, either at an Agricultural High School (AHS) run by MOA, or at a Technical High School (THS), run by the Ministry of Education. There are 26 AHS and about 50 THS, both providing a diploma after a four-year course. Annual output is about 600-700 graduates for the AHS and 800-900 for the THS. There is an effort to favor rural backgrounds among students. Official selection criteria set a 9:1 rural:urban ratio, but in practice many more urban students get in. About 80% of time is spent on academic subjects. Very few of the students actually go back to the family farm.

Evaluation

4.25 There is a Supreme Council on Technical Education but it is not clear that coordination for agricultural training between MOA, MOJ and the Ministry of Education is effective. As a result, there is no policy framework and it is not evident what demand is being met by the system. Students consider the training as a "second best" pathway towards university admission, while employers are disillusioned by the quality of the output. Concerns about quality appear justified: internal efficiency, as measured by repetition and drop-out rates, is low; external efficiency is probably low too, as few graduates are ready for employment, and the success rate with university entrance is also very low. There is a problem of curriculum content (the 48 hour school week is too long and the number of subjects taught too many), and teaching conditions are difficult (inadequate in-service training, inadequate equipment etc.) AHS generally have better facilities for practical instruction than the THS but the efficiency of the practical sessions leaves something to be desired: they are more focused on observation and demonstration than on hands-on skills training; and teacher:student ratios - sometimes 1:50 - are far too low for this kind of training. Regarding the intake, an urban bias has grown up in student selection. The limitation to boys deprives the nation of human potential and the public sector of trained female technical staff. There is also a growing academic focus in the curriculum, to the detriment of demand-driven, practical training.

4.26 It is recommended that a review of the value of the system be conducted. A first exercise should consist of "tracer studies" which would look at what actually happens to graduates of the system. In a second phase, a study should be carried out concentrating on issues of policy and organization, of demand-driven design, and of efficiency and value for money.

\textsuperscript{11} Girls are not provided for in the technical training system.
Chapter V - Inputs

A. The Input Supply System

5.1 There has always been a measure of Government intervention in the input supply system in Iran. Before the Revolution, there was also an active private sector but in the 1980's inputs were heavily subsidized and delivered through parastatal monopolies. Now Government policy is changing and the decision has been taken to cut out the subsidies, to dismantle the monopoly and to allow competition in input supply. Some steps have begun in this direction, including increases in input prices - although fertilizer prices were still highly subsidized in 1992/3 - and some private sector involvement in pesticides production and distribution. It will be important to ensure rapid development of competitive private businesses to avoid disruptions in supply during the transition. Government will also need to evaluate the impact on incomes of different parts of the farming population, and take measures to protect the vulnerable poor.

B. Fertilizer

5.2 The System up to 1993. Fertilizer consumption in Iran has been erratic over the last decade (Box 5.2), with supply being affected by war damage to domestic production capacity. Consumption topped the 2 million tons mark in 1992/93. About 60 percent of fertilizer is now produced locally. Up to 1993, fertilizer needs were assessed by MOA. The Ministry of Petrochemicals contracted with MOA's Fertilizer Distribution and Pesticide Production Company (FDPPC) for what could be produced domestically, and the Government Trading Corporation (GTC) was responsible for importing the balance. Distribution was carried out at the wholesale level by the Fertilizer Company, which delivered to the cooperative unions and to the industrial crop promotion agencies (sugar companies, Iran Tea Organization, Cotton & Oil Seeds Company). Farmers received fertilizer rations according to the crops that they agreed to grow in contracts with the extension service or the crop promotion agencies. Prices were set by the Consumers and Producers Protection Organization. Although prices were doubled in 1992, they were still only 5% of import parity price (see Box 5.1). Since 1993, FDPPC has assumed full responsibility from GTC.

<table>
<thead>
<tr>
<th>Box 5.1: Subsidies on Urea 1992/3</th>
<th>Imported</th>
<th>Locally Produced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import Price (USc/kg)</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Import Price in Rials (@ Rls 1450 = 1$)</td>
<td>232 Ex Factory Cost</td>
<td>63</td>
</tr>
<tr>
<td>Local Handling and Distribution</td>
<td>10 Local Handling and Distribution</td>
<td>10</td>
</tr>
<tr>
<td>Wholesale</td>
<td>15 Wholesale</td>
<td>15</td>
</tr>
<tr>
<td>Wholesale to retail</td>
<td>15 Wholesale to retail</td>
<td>15</td>
</tr>
<tr>
<td>Total imputed cost</td>
<td>272 Total imputed cost</td>
<td>103</td>
</tr>
<tr>
<td>Selling price</td>
<td>12 Selling price</td>
<td>12</td>
</tr>
<tr>
<td>Subsidy</td>
<td>260 Subsidy</td>
<td>51</td>
</tr>
</tbody>
</table>
5.3 Issues Previously Raised. The ASN discussed three important issues on
the fertilizer system. First, the system allocated fertilizer administratively
to crops and areas that MOA decided; as a result, cereals and some industrial
crops could be saturated with fertilizer while other crops for which the country
might have a real comparative advantage were starved; for example, the official
system provided very little of the potassium sulphate needed by vineyards,
although grapes are a high potential crop in Azerbaijan. The larger farmers
also benefitted in unequal measure because they were better able to pass
contracts with the official agencies; at Zarrineh Rud in 1992, for example, only
farmers who could contract for more than two hectares of wheat were accepted for
contracts and could access fertilizer officially. Farmers had to make up for
shortfalls by buying on the parallel market at higher prices. Second, the system
excluded the private sector, so that there was no competition that could make
the system efficient and no feedback from the market as to what farmers really
needed. Finally, the pricing system led to a wasteful use of fertilizer. Average
fertilizer use of 135 kg/ha is not excessive, but use was concentrated on irrigated
crops, particularly cereals.

Standard prescriptions for irrigated wheat, for example, are 150 kg urea and 200
kg DAP but farmers often applied much more.

5.4 Further Technical Issues. For the preparation of this study, further
analysis was carried out on the technical aspects of fertilizer use in Iran. The
following issues were identified:

- There is a mismatch between fertilizer available and what is needed.
  Under the present "monolithic" system, the two basic fertilizers - urea
  and DAP - represent 90 percent of fertilizer use. There is a definite
  shortage of potassium fertilizers, where needs are estimated at four times
  the current availability of 100,000 t a year. There is underuse (and
  misuse) of phosphate fertilizers and overuse of nitrogen (urea)
  fertilizer. There are no NPK compounds or soluble fertilizers available,
  and coated urea - which can double efficiency - is not available. There
  is a general shortage of acid fertilizers like ammonium sulphate which
  are needed for the generally high pH soils. Finally, micronutrients
usually needed more under alkaline soil conditions (Zn, Fe, Bo, Mn etc.) are not available.

Box 5.3 Fertilizer Consumption 1991/92 ('000 tons)

- Fertilizer use suffers from the weakness of research and extension, in that fertilizer prescriptions are concentrated on strategic irrigated crops and tend to be little adapted to regional situations. Research has lagged - present advice from SWRI is based on work twenty years ago.

- Farmers need to be trained in proper use of fertilizer - for example, urea is currently wasted by being applied with DAP at the time of planting winter wheat, when it could better be used as a spring top dressing. There are no soil testing facilities available to farmers at local level.

5.5 Changes in the Fertilizer Business. Government is aware of the issues raised above and is introducing some important changes in the fertilizer business. First, prices are to move towards import parity levels. Prices were doubled in 1992, and Government signalled that it intended to phase out subsidies to fertilizer. In 1993, Government announced that prices would move straight away to import parity levels. However, when prices shot up from Rls 12-20/kg to Rls 400/kg, the decision was taken to peg prices for 1993/4 at Rls 100/kg and allow further increases over time. Second, Government is trying to encourage private sector entrants to come into the fertilizer business. Already in 1992/3 private firms were allowed to import compound fertilizers and micro-elements for their own account; so far only very limited quantities have been imported. Private companies were also being licensed to blend and bag fertilizer adapted to regional conditions. From 1993, bulk fertilizer imports are being handled by the private sector under contract with, and for the account of, the Fertilizer Company. The fertilizer-producing plants have begun to sell a portion of their
fertilizer direct ex-factory at cost-plus to parastatal clients. At the retail level, the Fertilizer Company is using private firms to sell fertilizer on consignment parallel with the sales through the cooperatives. Finally, a new factory is under construction, to produce sulphur-coated urea; this will bring total national fertilizer production up from the present 1.2 million tons per year to 2.5 million tons (1.9 million tons urea).

5.6 **The Challenge for the Future.** The fertilizer sector is poised for major change, and there are some important questions:

- There will be a big impact on the incentives for farmers as fertilizer prices move up rapidly. At Moghan, for example, the cost of using recommended fertilizer applications on wheat will go up from 2% of total production cost in 1992 to 18% under full liberalization.

- Fertilizer use could well drop. Adjustment in the fertilizer sector will be difficult as price distortions are so huge and the monopoly of Government so extensive. Bringing prices to import parity level could create a drop in demand, and lead to both a fall in production and commercial problems for the distribution system.

- There is a need to promote private investment and competition actively. Government has begun to offer a share of the market to private interests but there has been a reluctance to take advantage of the new conditions as long as uncertainty remains over Government's intentions and as long as price controls and licensing remain in force. What is needed is the correct legal and commercial environment and an active and sustained policy from Government to promote private sector involvement.

- The present institutional set-up will have to change. The Fertilizer Company will lose its monopolies and administered margins; its future will have to be determined. In addition, Government and the emerging private sector will have to work out ways of conducting research, extension and fertilizer development.

5.7 **Recommendations.** It is recommended that:

- Government complete the transition to border prices in three years at most in order to eliminate distortions and allow full private sector participation.

- the Fertilizer Company be privatized, preferably in parts in order to avoid an initial over-large market share.

- licensing of fertilizer firms be replaced by simple registration on demand.

- fertilizer imports be liberalized.

- a study, steered by MOA and by representatives of the fertilizer industry, be carried out to determine the desirability of setting up a fertilizer
development institute, with a role in testing and development of fertilizer and related farming practices.\textsuperscript{1}

- the impact on price changes on crop profitability should be studied and revisions made to fertilizer recommendations. Where Government has some control over output prices, these should be brought up to border price levels.

- Government should adopt a proactive approach to promoting private sector involvement. The opportunities are many - for example, the creation of private soil laboratories in the provinces should be encouraged in order to allow farmers to select the correct fertilizer packages.

C. Plant Protection

5.8 \textbf{Organization}. The current organization of plant protection gives a predominant role to public agencies under MOA's aegis. The Pests and Diseases Research Institute (PDRI) is responsible for research and testing new products. The Pesticides Advisory Board approves the list of permitted pesticides. The Plant Protection Organization (PPO), employing about 2,700 staff, including 500 graduates, is responsible for public interventions to control pests, for controlling imports, local formulation and distribution of pesticides, for residue monitoring and for quarantine. The Fertilizer Company supervises the two parastatals and the four private companies that produce or formulate pesticides.\textsuperscript{2} The Fertilizer Company also distributes pesticides through cooperatives and licensed private retailers. In 1992/3, prices were very low. From 1993, Government began a liberalization of the sector. Under PPO control, private importers may import and distribute specific pesticides or materials for formulation, and private retail trade is now subject to no quantity restrictions. However, price controls keep margins low and there has been little response from the private sector. Finally, the Government's Special Aviation Services Company (SASC) provides services in crop spraying and common pest control (including locusts). SASC has 290 employees and 40 aging planes. SASC operates on a cost recovery basis but in 1991/2 lost Rls 100 million (on a turnover of Rls 1.5 billion) which was made up by a subsidy from MOA. At present, the only role in all this for the private sector is a partial one in formulation and in retailing.

5.9 \textbf{Assessment}. Plant protection is generally well handled, although the use of integrated pest management (IPM) techniques is still at an embryonic stage\textsuperscript{3}. In the area of pesticides regulation, vital for environmental protection, the framework and institutions are generally adequate. The pesticide application and environmental protection laws are clear and PPO has the appropriate legal authority to carry out supervision on quality and use of pesticides. However, pesticide residue monitoring is inadequate. There is interest and ability in the private sector to take over pesticide import,

\footnotesize
\textsuperscript{1} Such institutes exist in many countries; they usually enjoy an independent status and are funded by the fertilizer industry.
\textsuperscript{2} Of total pesticide consumption of about 50,000 t in 1991/2, about 28,000 t (55\%) was formulated in Iran.
\textsuperscript{3} The Pests and Diseases Research Institute is working on IPM models but there is little as yet being promoted in the field by the extension service.
formulation and distribution, once the pricing system is regularized, and this should be a priority. PPO's laboratories are reasonably well equipped and have dedicated staff, although there is a shortage of well-trained junior staff.

5.10 **Recommendation.** There is a role for public intervention in regulation, environmental protection and the control of common pests. Formulation and selling of products, together with crop spraying, are, by contrast, operations usually better carried out by the private sector. A development plan for the sector should include:

- a review of current legislation to adapt it to the new economic environment.
- opening up the business to the private sector. Parastatal pesticide formulation businesses should be sold to the private sector. SASC is also a good candidate for privatization; public services could then be purchased on contract.
- preparation of an adapted mandate and a development plan for PPO. This should include additional facilities for analyzing pesticide residues, an incineration plant, and upgrading of quarantine facilities. Government could prepare this plan, with specialized consultant assistance in pesticide residue monitoring and in quarantine.
- development of IPM.

**D. Seed Production & Supply**

5.11 **Organization.** In contrast to more developed economies (Box 5.5), the seed industry in Iran is the almost exclusive domain of the public sector, with limited private sector participation in contract production and preparation. The Seed Company, a parastatal under MOA employing 500 staff, produces and distributes annually some 230,000 tons of seed, largely cereals. Two other government controlled seed companies produce together some 15,000 tons of seed annually for sugar beet, cotton and oil crops. Small amounts of foundation, hybrid and vegetable seed are imported annually by the three companies. There are no private seed production or importing companies in Iran. The three parastatal companies receive registered basic seed from MOA's Seed and Plant Improvement Institute (SPII) and multiply these seeds countrywide under contract arrangements with farmers to produce certified seed. SPII and PPO check the growing crop, and the seed companies test the harvested seed for varietal purity and quality before bagging. Packaging and small seed treatment is done under contract by specialized private firms. Distribution is through the cooperatives.

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4/ See Annex 11 in Part II of the Study.
and ASCs. Prices are subsidized - for example, the 1992 direct cost of production for wheat seed varied from Rls 250 to 260/kg, while the selling price to farmers was Rls 170 to Rls 190/kg.

Box 5.5: Development of a Private Seed Industry

In the developed market economies, the private sector has long held responsibility for virtually all seed production, processing and distribution. The public sector is responsible for basic research, seed crop inspection and seed certification services, enforcement of plant variety protection statutes, and regulation of fair trading practices. This complementarity between private and public sector roles has been an important factor in expanded domestic seed output and spread of high-yielding varieties.

There is no ideal institutional structure for a seed system. The most efficient mix of public and private activities varies among countries, types of crops, and stages of seed system development. Both the public and private sectors have important roles, yet there are substantial limitations on what each can do separately. The public sector has a very important role in supporting R&D work, in promoting seed industry entry and competition, in implementing quality standards, in promoting farmer adoption of improved seeds, and in compensating for externalities and information-related problems in seed production and trade. Varietal development work is undertaken by the public sector throughout the world. The private sector can play an important role in production, where flexibility of action and responsiveness to market demand give the private sector advantages over the public sector.

In promoting seed system development, a legal and economic environment should be created to allow a broad range of institutions and participants to develop. Policies and programs should be designed which will induce investments in (1) informal, village-level seed production and exchange operations, (2) small-to-medium-scale private local companies, (3) large local, foreign or joint venture companies, and (4) seed associations and cooperatives.

In the early stages, the public sector will need to initiate or support plant breeding R&D activities and produce breeder and foundation seed. It can support nascent private sector development by making the foundation seed widely available, by providing financial and technical backing to seed multiplication pilot projects and to firms seeking to manufacture seed processing equipment, by training seed technicians, by encouraging the formation of seed producing associations or cooperatives, by instituting national seed policies, seed quality standards, and quality control programs, and by actively promoting the adoption by farmers of new crop varieties.

At later stages, the public sector can further stimulate private plant breeding R&D by providing enhanced germplasm and technical training, by facilitating the import of germplasm, and by making inbred lines available to private firms. Such efforts reduce the costs of entry for private firms and reduce the time period required for them to develop finished varieties and hybrids. For equity reasons or in pursuit of other objectives, governments may also subsidize the distribution of seeds in relatively remote or sparsely populated areas. Otherwise, seed subsidies are not necessary.

Adapted from Seed System Development by Jaffee and Srivastava (World Bank Discussion Paper No. 167, 1992)

5.12 Issues. The following are the main problems in the Iranian seed industry:

- There is, at present, no scope for private competition - seed production is not a legal monopoly but the subsidy system crowds out the private sector. Moreover there are no seed laws to protect breeders' rights and stimulate local seed development and production.
The subsidies inflate demand and cost public money - subsidies are universal, not limited to promoting the adoption of newly-released varieties.

Seed is of mixed quality - grading and purity are inadequate.

The emphasis is on irrigated cereals - production is overwhelmingly of cereals (90%), and largely of irrigated varieties.

5.13 Recommendations. Government has announced its intention to open up the seed industry to the private sector. This will require development of a seed policy and strategy, and actions on the commercial, institutional and legal aspects. Box 5.5 gives a summary of the considerations likely to be involved. In preparation for privatization, action is needed on the pricing structure: subsidies need to be eliminated. This needs to be coupled with legislation to protect breeders interests. Government should invite an agency such as UPOV to Iran to advise on the legal framework for seed production. Government should also conduct a consultant study on possibilities for partial privatization of its seed multiplication operations and on other ways and means of encouraging private sector participation, including promotion through the extension service of local seed production and exchange: assistance to small- to medium-scale private local companies, and encouragement to local and international firms to set up large-scale operations. In a first phase, the private sector could be interested in the multiplication of certain varieties and in seed marketing. However, Government should expect to retain a role in developing new cultivars, in producing foundation seed and in multiplication of seed for self-pollinating crops, as well as in quality control.

E. Agricultural Mechanization

5.14 The Pattern of Mechanization.
The development of mechanized agriculture has been a Government objective for many years. Policy has been to promote mechanization through subsidies; to promote domestic manufacture; and to avoid having too many different models of equipment in the country. The objective has been attained: the number of tractor units has grown from 8,000 in 1961 to over 215,000, giving 1 h.p. of tractor

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5/ UPOV is the International Union for the Protection of New Varieties of Plants, a Geneva-based international organization.
power per arable hectare, a higher level of mechanization than the US (see Box 5.6). Over 90% of irrigated land is prepared by tractor. Most tractors, combines and equipment are made locally, with domestic value added of about 70%. Standardization is very high - about two thirds of tractors are of one make, and a second make accounts for almost all the balance. About 90% of combines are of one make. Very low, subsidized prices have stimulated this high degree of mechanization but have also resulted in over-rapid substitution of mechanical traction for traditional means, labor displacement, a less than optimal capacity utilization and adverse environmental consequences as cheap mechanization has encouraged the ploughing up of marginal rangelands. Government policy for the SPYP is to eliminate subsidies, privatize manufacture and liberalize distribution. The challenge is to manage the transition to an economic and sustainable system of agricultural mechanization.

5.15 Institutions. MOA is responsible for mechanization policy. Until 1990 a National Farm Mechanization Committee (NFMC) coordinated production and imports, advised on education and research and maintained a data base. Now responsibility is shared among four separate MOA departments. At the production level there are two large manufacturers, both parastatal: the Iran Tractor Manufacturing Company (ITM Co.) which produces about 13,000 tractors a year at its Tabriz plant; and the Iran Combine Manufacturing Company (ICM Co.), producing some 750 combines a year at its Arak factory. There are two new parastatal plants under construction for the production of small tractors and tillers, and there is a large number of local manufacturers of agricultural equipment. National production, imports and distribution are supervised by another MOA parastatal, Bongah. MOA's Karaj Test Center (KTC) tests new equipment before it is approved for local manufacture or for import. The Agricultural Engineering Research Center (AERC) was set up in 1989 to conduct research on mechanization. Eight universities run BSc courses in agricultural engineering, and 30 technical schools train mechanics.

5.16 Pricing and Competitiveness. In 1992/93, machinery prices moved up as Government reduced subsidies, in particular, access to cheap foreign exchange. This took the price of a Massey Ferguson 285 tractor, for example, from Rls 1.6 million in 1991 to Rls 9.7 million in 1993. When all subsidies are removed, the price is likely to go up to Rls 13 million or more (US$8,200, against world market prices for comparable tractors of US$12,000 to US$16,000). Iranian manufacturers should thus be able to compete against imports, and perhaps even to export. Once all subsidies are phased out, the long-run cost of all mechanical operations required on one ha of irrigated wheat, for example, is likely to increase from around Rls 50,000 to Rls 95,000. In the short term, the farmer will be protected by the existence of a quite competitive custom hire business.

5.17 Issues and Recommendations. There are a number of issues for mechanization development:

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Note, however, that it is estimated that 15% of tractors are working outside agriculture and 15% are out of commission, so that available horsepower may be only 0.7 hp/ha.
a coordinated national strategy is required. Even under free market conditions there will be a need to coordinate services like research, testing, education and data collection. A structure like the former NFMC, reinforced with private sector participation, should be considered. Within MOA, a single department should be responsible for mechanization policy. With liberalization, the role of public sector institutions should change. The parastatal manufacturers should be privatized. Bongah's role in allocating subsidized equipment will disappear and the possibility of privatizing its commercial operations should be examined. Bongah has extensive skilled staff; and the process of change should release a number of these to the private sector where their skills can be readily used. KTC should confine its testing to prototype equipment, leaving the competitive market to maintain quality standards.

the research agenda needs to be revived. Adaptive agricultural mechanization research has been neglected. Current research is rather theoretical. What is needed is adaptive research by an institution with industry participation such as the Design & Engineering Company, which is jointly owned by the private sector and Bongah. Adaptive research in agricultural mechanization should also be undertaken by selected MOA research stations.

no special action is needed to promote or, conversely, to avoid proliferation of equipment models. The range of tractors and equipment available is currently too limited but this problem should disappear with liberalization. Given the enormous head start held by existing makes and by domestically produced equipment, there is little danger of an unhealthy proliferation of new makes. Liberalization of domestic manufacture and of imports will act as complementary policies that will keep prices competitive and offer a wider choice to farmers. In fact, the world market for agricultural machinery is contracting and this should lead to keen price competition, to the benefit of farmers.

there should be a program of scholarships, study tours and technical assistance. Officials and industry managers should visit neighboring countries which face similar development constraints. A particular issue is mechanization and land fragmentation. Overseas scholarships could be funded. Short-term technical assistance would be beneficial in such areas as mechanized cereal harvesting, and seed production and harvesting.

F. Agricultural Credit

5.18 The Financial Sector. In 1979, following the Revolution, all banks were nationalized and several were fused to form three sectorally-specialized banks. The banking sector is governed by a High Council under the Governor of the Central Bank. Since 1984, all banking operations are subject to the Islamic

\[ \text{This issue may have been resolved by the creation, in the April 1993 reorganization, of a new Technology Department responsible for mechanization.} \]
Banking Law, which prohibits usury and provides for a number of specialized contracts historically recognized by Islam (see Box 5.11). Recent changes in the banking sector have raised deposit and lending rates and allowed the creation of private non-banking financial institutions. Lending rates for trade and services are now market-determined (around 24% in 1992). Lending rates for industry, mining and housing are set in the range 12-16%. Lending rates to agriculture are in the range 12-16%, except for loans to poor farmers and target activities which benefit from interest rate subsidies (see Box 5.11).

5.19 Agricultural Credit. In the agriculture sector, finance is provided by the commercial banking system, by the Agricultural Bank (AB) and by semi-formal and informal systems, including a network of village savings and loan associations (Sanduq Qardh al-Hassaneh) organized on Islamic principles. AB is a wholly-owned Government bank specialized in lending to the agriculture sector. It is run by a Board for which the Chairman and Managing Director are appointed by the General Assembly, and the Board members by the High Council. AB has 520 branches and 8,900 employees. Total assets in 1992 were Rls 1,742 billion (US$1.1 billion); funds are drawn from lines of credit (62%) and deposits (21%) and the balance from shareholders’ funds (Box 5.8). Only one loan in ten is secured with collateral; the others are secured by personal guarantee. 44% of lending goes for crops, 32% for livestock (Box 5.10). Loan recovery was as low as 41% in 1985/6 but AB has created a special Collections Department and got the rate up to 87% in 1992/3. Rates and margins are low; in 1991/2 the net margin of 1.9% was inadequate to cover operating costs of 2.4% and provisions of 0.7%. The loss was equal to 1.2% of risk assets, added to a loss of 0.4% in 1990/1 (Box 5.9).

5.20 Issues. AB is a generally well run institution with competent staff, but its potential is limited by some structural problems:

rate controls - AB operates within Government controls on both deposit and lending rates. These controls have left small margins - around 2% - to cover operating costs and provisions. For the last two years for which accounts are available (1990/1 and 1991/2) this took
AB into loss and the balance sheet deteriorated;

lack of autonomy - AB is an instrument used to execute Government's sector development policy. Investments in Government projects, for example, have created an equity portfolio which has historically yielded a meager less than 1% return. This reflects a comprehensive portfolio, including profitable, emerging and unprofitable businesses. Detailed analyses are required for commercial investments and adjustment to divest direct shareholdings and involvements in land development should be emphasized.

lending limited to agriculture - AB's lending is overwhelmingly for agriculture, representing an undesirable concentration of risk. AB also loses the chance of promoting off-farm enterprise and employment creation in rural areas.

5.21 Recent Developments. Recent changes in the financial sector have affected AB. With liberalization of the banking sector, AB's resource base is drying up: the commercial banks now find more profitable uses for their funds, and AB is now more dependent on Central Bank lines of credit for its resources. At the same time, demand is going up sharply; with the advent of liberalization, prices are rising - e.g. for inputs and equipment - and AB will need to expand its resources in nominal terms just to maintain the real value of its lending.

5.22 In order to tackle the issues discussed above, Government's emerging policy for AB is to convert it into a banking operation with a broad remit for supporting the rural sector. This policy includes reliance on market-generated deposits as the major source of funding, and phasing out of transfers of Government resources. Interest charged on AB loans was raised (1993) to the range 12-24 percent. In addition, the Government proposes to grant specific interest rate subsidies to AB to buy down interest rates for target groups, rather than to make cheap lines of credit available. AB is responding to these new conditions with new programs, including: (i) the use of cooperatives as intermediaries for disbursement and recovery and for the mobilization of rural savings - a pilot project with 300 cooperatives is underway and Rls 1 billion in deposits has been generated; (ii) opening of small branches in villages to decentralize loan disbursement and supervision and to begin deposit mobilization - a pilot effort will open 168 of these mini-branches in 1993/4; and (iii) an effort at urban deposit mobilization. However, no decision has been made to divest AB shareholdings in agricultural companies and AB is still being used as an instrument of policy, as shown by the commitment to heavy investments in the sugar sector: AB has 64% of the equity in the new Mianab complex (total cost Rls

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2/ This system is already being introduced for some contracts - see Box 5.11.
### Box 5.11: Islamic Banking Contracts at AB

<table>
<thead>
<tr>
<th>Contract</th>
<th>Characteristics</th>
<th>Cost to AB</th>
<th>Cost to Borrower</th>
<th>Outstanding at the end of 1990/1 (Rig dp)</th>
<th>Share of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qardh al Hassaneh Article 3</td>
<td>Medium to longer term loans to individuals in target activities. Deposits from other banks at 1%.</td>
<td>3% 3/4</td>
<td>262</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Qardh al Hassaneh Article 4</td>
<td>Short-term loans to individuals through cooperatives. Annual vote by Parliament at 1%.</td>
<td>2.5% 3/4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installment Sale</td>
<td>Working capital and investment loans repaid in fixed installments with a set rate of profit.</td>
<td>5%</td>
<td>Standard 5%</td>
<td>681</td>
<td>35</td>
</tr>
<tr>
<td>Jo'aalah</td>
<td>Loans up to eight years term to finance development contracts, repaid in fixed installments with a set rate of profit.</td>
<td>5%</td>
<td>Standard</td>
<td>121</td>
<td>11</td>
</tr>
<tr>
<td>Salaf</td>
<td>Short-term working capital advances secured on the growing crop.</td>
<td>5%</td>
<td>Standard 5%</td>
<td>88</td>
<td>5</td>
</tr>
<tr>
<td>Modharabeh</td>
<td>Working capital loans up to one year for trade, with a contractual minimum rate of profit (profit payment not enforceable in case of demonstrated loss).</td>
<td>5%</td>
<td>Standard 5%</td>
<td>86</td>
<td>3</td>
</tr>
<tr>
<td>Civil Partnership</td>
<td>Joint venture with profit sharing. Similar to venture capital approach.</td>
<td>5%</td>
<td>Standard</td>
<td>142</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>194</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>1482</td>
<td>100</td>
</tr>
</tbody>
</table>

1/ Islamic Banking was introduced in Iran in 1984, with a number of loan contracts designed to be “usury-free” in order to respect the interdicts in the Qur'a'n. The system also accommodates usury-free deposits.

2/ AB pays 6% on these resources, and receives a 6% cash subsidy from Government, so the cost of funds is zero.

3/ Cost to borrower represents cooperative, farmer beneficiaries pay 1% in addition.

4/ Standard terms in July 1993 were: current loans 16%, and investment loans 12%. Deprived areas benefit from an interest rate subsidy of 70%.

5/ Rate paid by AP varies between 6% and 8%

300 billion. It is important that AB business which is development oriented and carried out as part of Government programs, be contracted and accounted for separately. This would enable more efficient transfer of assistance for special purposes, e.g. rural poor.

5.23 **Prospects.** AB is facing the challenge of evolving into a full service rural financial institution in the context of very rapid change in its
environment. At present, no formal statement of new policy towards AB has been made and the financial arrangements are not formalized. It is likely that the SPYP will confirm the policy outlined above. In order to implement these changes, it is recommended that:

- Government set a policy of deposit and lending rates for AB that will allow it to compete for deposits and cover its costs, including bad debts provisions.
- Government and AB carry out the rural financial markets study (being financed under the Irrigation Improvement Project) as soon as possible.
- AB’s future role in the sector be determined in the light of the study.
- AB prepare a five-year business plan and conduct an institutional audit to identify how to adapt its organization and staff to the evolving mandate of the institution.
- AB should reorganize its planning and accounting procedures to provide specific portfolios separating each special assignment delegated under Government development plans (e.g. for under-privileged areas or rural poor people) from commercial operations and AB capital.

G. Cooperatives

The Cooperative System

5.24 Iran has a very extensive network of cooperatives in rural areas. The most widespread form is the Rural Service Cooperative (RSC), of which there are 4,200 branches (companies), 24 provincial associations, and a national federation - the Agricultural Cooperative Company (ACC). The provincial associations provide administrative, logistical and marketing support while the ACC issues branch licenses and coordinates policy making and operations of the provincial associations. The system covers 90% of the total villages in Iran and has 4.5 million members. The RSCs are multi-purpose cooperatives whose main functions are: input and equipment supply, purchase of support price commodities (largely wheat), sale of consumer goods, and credit distribution.

5.25 A second form of service cooperative is the Agricultural Cooperative Society (ACS); there are 1,158 ACSs, with 562,000 members. Each is specialized in a particular activity, such as poultry production or machinery services. The RSCs and the ACSs are supervised, trained and backed up by the Central Organization for Rural Cooperatives (CORC), a civil service department attached to MOA; CORC has 4913 employees. Moshaa Production Cooperatives (12,800 societies with 100,000 members) provide common services to peasants who benefitted from the land reform. Production in common by Production Cooperatives is being promoted by MOA as a means of farming small plots efficiently, but these cooperatives are not common (76 societies with 15,500 members). MOJ has a policy of active support to cooperatives, mainly in livestock and carpet weaving.

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10/ Outline terms of reference for this study are attached to Annex 16.
Evaluation

5.26 The cooperative movement is set up, in principle, in accordance with internationally accepted cooperative principles of autonomy and democracy. There are no direct subsidies. However, the "supervision" provided by CORC has a technical assistance content, and the main income of RSCs is the margin on input supply and cereals procurement on behalf of the State. There is thus a classic tension between the top-down approach, and the inherently decentralized, private, democratic nature of true cooperatives (Box 5.12). Through the government's use of these cooperatives as instruments of input supply and crop marketing policy

Box 5.12: Cooperatives - Past Problems and Future Potential

Decades of cooperative development have fallen short of expectations. The most significant problem has been the way in which cooperatives were promoted. Top-down promotion has prevented members from actively participating in development. Organization and activities were determined by external promoters, and cooperatives failed to develop into true member-based, self-help entities. Governments have used cooperatives as a means to help carry out their own development agendas. The often indiscriminate promotion of cooperatives—without attention to internal dynamics, incentives, and control structures and membership education—has frequently resulted in bureaucratic organizations overly dependent on government support and political patronage. The main lesson is that the relationship between governments and cooperatives must be redefined to create an environment more conducive to development of independent cooperatives. Direct support to cooperatives should be limited to training of officials and members, and establishment of (preferably self-managed) control mechanisms to protect members' interests.

Cooperatives must not be expected to accept too many responsibilities within too short a time. It is unrealistic to think that cooperatives can quickly assume all functions of defunct parastatals, other government bodies, or private actors. Cooperatives can be vigorous alternatives or supplements to such institutions in providing rural services. But building strong and viable cooperative systems is an involved and demanding task that cannot succeed if carried out in haste.

Adapted from: Promoting Rural Cooperatives, by Braverman et al. (World Bank Discussion Paper No. 121)

and because of Government's generally interventionist approach to cooperative development, the movement—particularly the RSCs—has become passive and administrative. Everybody belongs, but only because it is essential to belong in order to get access to inputs and to market the wheat; the RSCs take little initiative and simply do what they are told.

5.27 With the advent of liberalization, cooperative revenues have started to decline—rationed consumer goods have largely been eliminated and the purchase of support price commodities is mainly limited now to wheat. The liberalization of input supply will also reduce cooperative income. The movement thus faces a problem of viability. The challenge is to breathe new life into the institutions in order to capitalize on their substantial human and physical assets. It is recommended that a new cooperative policy be adopted that would help the system to convert to being a genuinely farmer based and managed movement. The main objective of a new policy should be to create an enabling environment for the development of independent cooperatives, with Government's role limited to setting up and monitoring a framework to protect members' interests. In the initial stage, Government and the movement should seek the guidance of the cooperative movement worldwide (the Geneva-based International Cooperative Alliance, for example) on an appropriate policy and legal framework, and on the preparation of a plan to restructure the movement and to develop it within the private sector (including pilot projects). The role of such a movement under the new economic reality could be in such areas as: input supply on a commercial basis; crop marketing and processing; technical services such as extension and pest control; savings and loan activities; and machinery services.
Chapter VI - Livestock, Forestry & Fisheries

A. General

6.1 In 1990, responsibility for the natural resource subsectors - livestock, range, forestry, fisheries - was transferred to MOJ. This institutional affiliation was designed to bring out the complementarity between natural resource management and the rural development activities which are at the heart of MOJ's program. In principle, MOJ now provides services to the whole rural environment. In practice, the separation of natural resource management and livestock from crop production is a major problem for agricultural services. This is vividly illustrated by the discussion below of the cases of animal husbandry (Part B) and of rangeland (Part C). Additional general issues that emerge in this chapter are the need to define the role of the public sector, the scope for privatization and the potential for increased cost recovery.

B. Livestock

6.2 Livestock production contributes about one third of value added in the agricultural sector. Livestock services are treated in detail in the ASN and in the preparation documents for the RLDP. Discussion here is confined to a succinct, issues-oriented summary. MOJ has held responsibility for livestock since 1990. The Deputy Ministry for Livestock Affairs has a recurrent budget of Rls 16.5 billion (US$11.0 million) annually and employs over 5,000 staff.

6.3 Animal Husbandry. The Livestock Affairs Department (LAD) had a budget of Rls 18.4 billion (US$12.3 million) (Box 6.1) in 1992/3 and employs about 1,500 people. Its main activities are in \textit{cattle breed improvement} through AI and stud farms. Smaller programs deal with \textit{sheep breed improvement} and promotion of \textit{improved husbandry} through a limited extension program and through financial assistance to livestock buildings and fattening. The main issues affecting LAD are:

- the dominance of the public sector in \textit{breed improvement} - the private sector could certainly play a bigger role, but has been squeezed out by the subsidized Government programs. LAD has begun privatization of AI services and this should be completed by raising the price of the service and transferring responsibility to the private sector. A more open registration system should be introduced to widen the selection base and speed up genetic improvement.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Box 6.1: LAD Budget 1992/3} & \\
\hline
\textbf{Rls billion} & \\
\hline
\textbf{Recurrent} & 5.8 \\
\textbf{Investment} & 12.6 \\
\textbf{Total} & \textbf{18.4} \\
\hline
\textbf{US$ 12.3 million} & \\
\hline
\end{tabular}
\caption{LAD Budget 1992/3}
\end{table}

\footnote{1/ Volume II, Annex 5.}
the neglect of animal husbandry themes - little attention has been paid to improving forage or feed production, or to strengthening interaction with the overall agricultural extension effort. Yet the majority of farmers practice both crop and livestock production, and an integrated approach, especially in fodder production and the use of crop by-products, is required to achieve more profitable, sustainable production systems. This will require the institutional reorganization and the pragmatic collaboration which is a major recommendation of this Study (Chapter X).

- Government monopoly of meat imports - this dominant market position creates inefficiencies and rents and responsibility should be progressively transferred to the private sector. MOJ is intending to commission studies to look at privatization options.

- inadequate hygiene standards - better hygiene regulations for slaughterhouses and for meat packing and processing need to be set and enforced.

6.4 Veterinary Services. The Iran Veterinary Organization (IVO) had a budget in 1992 of Rls 9.4 billion (US$6.3 million) and employs 700 veterinarians and 3,000 veterinary assistants. IVO operates 60 veterinary centers, 120 laboratories and 1,200 mobile teams. Its main activities are free vaccination against the main endemic diseases (rinderpest, sheep pox, anthrax, foot and mouth), campaigns against brucellosis and tuberculosis, and clinical treatments. IVO runs some 500 mobile teams in the provinces. Vaccines used to be supplied free by the Razi Institute, but the Institute is now required to become financially self-sufficient and vaccines are being charged to IVO. The main issues affecting IVO are:

- cost recovery is low - Government is reducing subsidies to IVO and the Razi Institute and increased financial participation of producers should be sought, primarily for services that benefit individual farmers such as clinical treatments and non-compulsory vaccinations.

- the public sector is dominant - veterinary care is dominated by the public sector, and only about 20% of veterinarians are in private practice. The burden on the public purse is considerable. In the future, veterinary care will be increasingly required for intensive production units where growth is anticipated (Chapter I). Here, services can be provided by the private sector, and public services can concentrate on monitoring, supervision and service to extensive livestock rearing. Privatization should be accelerated by encouraging private practice through allowing fees for clinical treatments to rise, testing alternative approaches to animal drug provision such as using registered technicians (who might also work as inseminators), and subcontracting public services like meat inspection and compulsory vaccinations. The vaccine production function should be privatized, perhaps in a joint venture with a foreign partner that would give access to more up-to-date technology.
.. separation of functions - even after privatization of vaccine production, Government should still control vaccine quality.

C. Rangeland, Watersheds and Anti-Desertification

6.5 Rangeland. For management purposes, some 90 million ha - 60% of the total area - is classified as rangeland. The nationalization of rangelands in 1962 interfered with traditional management systems and reduced users' interest in conservation. Subsidy policies also contributed to degradation; the subsidies on cereals and mechanization caused some of the best range areas to be ploughed up to marginal and erosion-prone cropping, and the range area dropped from 110 million ha in 1965 to 90 million ha in 1990. The policy of subsidized feed grain and high red meat prices further increased pressure on the range by allowing higher carry over of animals through the winter. As a result of this and of encroaching cultivations, productivity of rangelands is said to be declining by 2% each year, and only 16% of range is classed as in good condition. Responsibility within MOJ for range lies with the Forest and Range Organization (FRO) and its Range Department. Until 1990, range improvement was carried out by the Range Management Service at Government expense with little participation from range users. There was no emphasis on subsequent management. Since 1978, improvement work was implemented over some two million hectares. However, to aim for sustainability, the approach since 1968 (which was accelerated under the FFYP) has been to issue 30-year leases as an incentive to range users to undertake range improvements and subsequent improved management. Leases are conditional upon acceptance of a range plan, are heritable, and can be sold. To mid-1992, leases had been issued and range management plans approved and implemented for 800,000 ha. Acceleration of the programs will be supported under RLDP.

6.6 The principal recommendations on range are:

- land use regulations should be adopted and enforced to prevent the continuing loss of rangeland to cultivation

- crop production, livestock and range services have to work together to avoid the previous pattern of highly negative "competition" between marginal agricultural uses and livestock uses of range, and to return marginal land to range use. This recommendation will still need careful attention even under the restructuring recommended in Chapter X. Services have to work together on policy and planning, in information-sharing and in designing and implementing field projects.

- subsidies on feed and concentrates should be phased out in order to reduce overstocking of the range.
the research agenda should be broadened to monitor trends in range conditions and to develop sustainable and cost-effective rehabilitation methods and management systems.

information, education and extension should be provided for farmers and livestock owners nationwide on the serious range degradation and soil erosion problems the country is facing.

6.7 Watershed Management. Soil erosion is a problem over about half of the country, and soil conservation measures are required in all upland areas. In 1991 Government created within MOJ a new Deputy Ministry for Watershed Management from the previous Bureau for Soil Conservation and Watershed Management. The Deputy Ministry has a total of 1,200 staff, 500 of whom are higher level specialists. Skills are adequate as many universities have courses in watershed management. However, political and financial support for the programs is quite inadequate, and there is little attempt to enforce existing regulations. The most urgent and important job is the conservation of watersheds in dam catchments, where siltation is a major problem. Watershed conservation is relatively low cost, and this investment should be a precondition to any new project to impound water. Conservation is also a priority in the catchments of existing schemes. About 14 million ha are now covered by conservation plans but only about 1 million ha has been implemented to date. The slow rate of implementation is a major problem. MOJ is beginning to mobilize popular support for the program, but sustained coordination is required between several branches of MOJ, as well as with MOE and MOA. Here again institutional reorganization recommended in Chapter X needs to be followed through by joint planning and programs.

6.8 Anti-Desertification. The Range and Soil Department’s Anti-Desertification Service has conducted a successful campaign against sand dune encroachment. All critical areas have been treated and work is now concentrated on preventing formation of dunes at source. The service has about 100 planting teams operating in 13 provinces. It is recommended that priority now be given to ensuring sustainable maintenance, with full play being given to MOJ’s community mobilization.

D. Forestry

6.9 The Sector. Land clearing for agriculture, firewood and charcoal production reduced the area of forest in Iran from 17 million ha to 12 million ha in the three decades from 1960 to 1990. Policy is now based on management, afforestation and community forestry. Within MOJ, the Forest and Range Organization (FRO), a Deputy Minister, is responsible; it employs about 10,000 staff, including 1,250 graduates and had a budget of Rls 102 billion (US$ 68 million) in 1992/3. In addition, FRO mobilizes

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2/ Links should be established with MOA’s remote sensing function (Chapter III).

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volunteers from schools and colleges, the army etc. and from the rural communities themselves. This reduces the cost of programs and increases ownership of projects by the population.

6.10 Management. Forests belong to the State and FRO’s Forestry Department is responsible for management. The key tool is the management plan which provides for management for sustainability and profit. These plans exist for only about 1 million ha to date; within these areas, production is controlled and cooperatives are being promoted. The Forestry Department is piloting a scheme for assisting the removal of forest dwellers to well-equipped farms outside the forest; a substantial part of the cost is paid by Government. Preliminary results suggest that underbrush now left unbrowsed can be a fire hazard, particularly in the Zagrous forests.

6.11 Afforestation. Afforestation is the responsibility of FRO’s Forestry Department. There are 90 Government forest nurseries and 250-300 nurseries (of which 5-10 percent are private); Government underwrites the output of the private nurseries by purchasing unsold plants. Total annual afforestation has increased sharply from its mid-1980s level of approximately 20,000 ha; in 1991 84,000 ha were planted. Government subsidizes private planting (Rls 50,000/ha) but apparently intends to reduce this subsidy. Agroforestry has always been an important feature in Iranian farming, and scattered in-farm plantings of poplar are actively managed.

6.12 Forestry Extension. FRO’s Training & Extension Department began forestry extension in 1985. Initially, two or three agents have been assigned to each province to set up the programs; the intention is to develop a community forestry program with one contact volunteer in each village (60,000 in all).

6.13 Recommendations. The main issues and recommendations on services to the forestry sector are:

- the slow pace of preparation of inventories and management plans needs to be accelerated; a private organization specialized in natural resource management could assist in improving methodology.

- most forest industry plants are state-owned. These businesses are excellent candidates for private ownership and privatization should be implemented.

- the commitment to afforestation is encouraging but the balance of effort between the public and private sectors requires scrutiny - in the long run, Government’s role should be limited to the incentive framework and management support.

- forestry extension provides a challenge - a socio-economic study should be conducted and pilot projects launched in the most promising areas. The scope and form of the national program should be decided progressively as experience is accumulated. Particular attention should be given to encouraging agroforestry.
E. Fisheries

6.14 Resources. Iran has 1,800 km of southern coast on the Persian Gulf, and 900 km of coastline on the inland Caspian Sea. In addition, there are 1.5 million ha of inland lakes and rivers. Fisheries are a large resource and fishing is a fast growing industry - almost 300,000 t of fish was sold in 1991. This has allowed an increase in per capita annual fish consumption in urban areas from 1.07 kg in 1982 to 4.34 kg in 1989. In addition, there is a rich stock of high value caviar and shrimp.

6.15 Fish stocks in the south are highly variable but sustainable yield is 1.5 million t. Fishing is done by large-scale commercial private firms and by small-scale fishermen. There are 246 fishing centers, 5,861 fishing vessels and 55,000 fishermen. With allied on-shore employment the total number of people employed by the industry is 100,000. The industry has been expanding fast, and total catch has gone up from 59,000 t in 1982 to 260,000 t in 1991. Government has taken an active role in investment in the industry in the south, constructing fishing centers, and establishing delivery depots, can making factories, fish meal plants, a net weaving factory and 40 boatyards to produce 80 vessels a year. In the north, fishing employs about 14,000 fishermen. The mainstay of the industry is the sturgeon, the most expensive fish in the world. Sturgeon fishing and processing is a Government monopoly. Average caviar production is around 300 t a year. There are 51 fishing and processing stations for caviar. Small-scale fishermen catch white fish and mullet. Total catch of commercial fish is 33,000 t.

6.16 Aquaculture. Aquaculture in Iran started with a sturgeon breeding program in 1922. Annual fingerling production is now 263 million, mostly for release as part of Government’s stock rehabilitation programs. Nine fish hatcheries and two shrimp hatcheries are in operation. Fish and shrimp farms cover about 5,000 ha. Marketed fish production from these farms in 1992 was around 47,000 t.

6.17 Institutions. MOJ has responsibility for the fisheries sector, which it exercises through a company called the Iranian Fisheries Corp or "Shillat". Shillat functions like a ministry department and its Managing Director has the rank of Deputy Minister within MOJ. Shillat had a budget of Rls 89.4 billion (US$56.4 million) in 1992/3. Shillat also runs the Iranian Fisheries Research and Training Organization (IFRTO), with headquarters in Tehran and centers in both north and south. There are three fisheries training centers: the College of Fisheries at Bushehr, and two centers in the north. In each fishing ostan there is a provincial department of fisheries. About one third of artisanal fishermen belong to cooperatives - in the south there are 65 fishery cooperatives, with a total of 17,537 members.

<table>
<thead>
<tr>
<th>Box 6.3: Shillat Budget 1992/93</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Rls billion)</td>
</tr>
<tr>
<td><strong>Government Budget</strong></td>
</tr>
<tr>
<td>Recurrent</td>
</tr>
<tr>
<td>Investment</td>
</tr>
<tr>
<td>Services</td>
</tr>
<tr>
<td>Aquaculture</td>
</tr>
<tr>
<td>Port Construction</td>
</tr>
<tr>
<td>Research</td>
</tr>
<tr>
<td>On-Shore Facilities</td>
</tr>
<tr>
<td>Communications Facilities</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

Source: Appendix Table 4.1 and Shillat

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Provincial cooperative unions are responsible for supplying inputs and they market part of the catch.

6.18 **Resource Management.** Shillat is responsible for overseeing sustainable exploitation of the fisheries resource, through **licensing** of vessels, through controls on **net size**, through controls on **fishing methods** - except for shrimp in season, trawling is now prohibited in the Persian Gulf - and by setting **fishing zones** - inshore fisheries being reserved for artisanal fisheries, for example - and **fishing seasons**. Legal sanctions are applied under the Illegal Fishing Law and the Iranian Fisheries Constitution. There is a Commission for Fishing Violations. Stock assessment is carried out by IFRTO - this allows the determination of the sustainable yield and the management of stocks in favor of artisanal fishermen. Statistics are managed by the Iran Statistics Center.

6.19 **Development Programs.** Government's main objective has been the modernization of small-scale fisheries, which account for 75% of the catch in the south, and to develop the substantial underexploited resources. This has been aided by the ban on trawling and by Shillat's development programs. Shillat is working to introduce new technology, conducts training programs, and supports organizational development, focused on cooperatives which are responsible for marketing. About two-thirds of Shillat's operating budget goes to providing services to small-scale fisheries. Shillat also has an extensive program to develop infrastructure and processing at a number of minor fishing ports. Fresh and brackish water aquaculture is another main area for development.

6.20 **Issues.** Fisheries production has undergone a rapid and successful expansion in the last decade. The stimulus was the need for protein during the Iran-Iraq War, when Government actively promoted development through programs and subsidies. This policy led to about one-third of large-scale fishing production being in Government hands. Now the challenge is to encourage a viable industry that can survive without subsidy, and at the same time to increase value added in the sector. Government policy now provides for privatization of large-scale operations and the promotion of cooperative development for small-scale fisheries combined with assistance to technology transfer, investment and marketing in order to increase value added. It is **recommended** that the privatization of the large-scale operations be completed rapidly, and that Shillat's efforts be concentrated on developing a viable cooperative artisanal fishing industry. The World Bank has been asked to assist with a fisheries sector study which will identify public and private roles and sector investment requirements. The study will examine options for completing the privatization of the commercial organizations.

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2/ A further issue to be examined in the study is the breakdown of international agreements on the Caspian Sea and the risk to fish resources that may result.
Chapter VII - Rural Development

A. Rural Development Policy in Iran

7.1 General. The objective of Government’s rural development program is to stem rural-urban drift. Iran’s population has gone up rapidly and most of the increase has been in urban areas. To counter this trend, the post-Revolution Government gave priority to rural development, including health and basic needs, rural infrastructure, economic diversification and job creation, and popular participation and cultural development. There was a considerable shift in the balance of resource allocation - rural areas received about 26% of total public investment in the decade after the Revolution. In line with this priority for rural areas, Government set up MOJ to coordinate rural development. MOJ’s mandate includes rural roads, rural water supply and sanitation, electrification, rural planning and encouragement of popular participation.

B. Popular Participation

7.2 MOJ has fashioned a program of institutions and activities that give primacy to structured participation, with a strategic role for the state as catalyst and facilitator. Participatory institutions in rural areas include the Islamic Rural Councils, village centers, rural development houses (Chapter IV), village libraries, and the cooperative structure. MOJ gives the maximum role to villagers: the initiative of village institutions is encouraged, facilitators who are members of the village councils are elected to promote development. MOJ has training officers at the provincial and local levels who support these efforts. Popular participation is supposed to be integrated into all MOJ programs and can be seen in practice in watershed management, in livestock, in the nomads program. Cost sharing is a pre-requisite to all MOJ programs.

7.3 Traditional Groups. In addition to the practices and organizations which are being promoted as the interface between the rural population and a modernizing state, there are also traditional groups to be found almost everywhere. These groups generally have their origins in economic cooperation - for example, many groups exist for communal operation and maintenance of irrigation systems; others exist to pool resources for land management and cultivation. It would be worthwhile to study the prevalence and nature of traditional groups and local structures as a basis for increasing popular participation in all aspects of development.

7.4 Islamic Foundations. Islamic institutions are important channels of information between country and town, and can be vectors of change. The role of the mosque and the mollah is important in village life. Also noteworthy for rural development are the activities of the eight Foundations set up after the Revolution. Endowed with substantial resources, including assets taken over from

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See Appendix 2 to this Study, "Land and Water Management" for more information on the origins and development of these groups.
the private sector\(^2\), the Foundations run big social welfare programs, notably in rural areas, and are involved in rural development investments, including construction of dams and other projects.

C. Rural Infrastructure

7.5 Government implements its rural infrastructure program through MOJ’s Rural Infrastructure Deputy Ministry. Programs cover: roads; potable water supply, waste water drainage and sanitation; village infrastructure and environment; and electrification. Investment is considerable - Rls 132 billion in 1992/3 (US$88 million). Priority is given to regions of dense population in the deprived areas\(^3\); and to areas with potential for agroindustry and other off-farm employment. MOJ attaches importance to "ownership", particularly through training and organization for operation and maintenance of communal facilities.

7.6 MOJ is responsible for planning, implementation and maintenance of rural roads. Beginning from a low base of about 8,000 km of rural roads prior to the Revolution, the network has now expanded to about 50,000 km of graveled roads and 6,400 km of asphalted roads. In recent years the pace of new road construction has slackened and emphasis has been given to maintenance of the existing network. Eight maintenance centers have been set up and a routine and emergency maintenance program is in operation.

7.7 MOJ has responsibility for all water services to rural communities. The program gives priority to larger villages, especially where health coverage is not good, and to villages dependent on tankered potable water. The program requires financial participation from villagers and helps organize and train volunteer villagers to take charge of subsequent operation and maintenance. Design and construction are kept simple to cut down on cost and to reduce operation and maintenance problems and costs. Other activities include sewerage (26,000 toilet facilities constructed 1980-90) and bath houses.

7.8 In the decade 1980-90, MOJ brought electricity to 10,680 villages; about 66% of the rural population now have electricity (FFYP target 80%). Implementation is by specialized MOJ teams. The program has recently slowed down

\(^2\) 60 percent of enterprises taken over now belong to the Foundations.

\(^3\) Deprived area is a legal term for regions of the country that have been gazetted as less-developed according to a set of criteria established by PBO.
due to shortages of foreign exchange and materials. A recent innovation has been small hydropower projects.

7.9 MOA also runs a "village amenities" program: physical planning and upgrading of village infrastructure. MOJ works with villagers to establish "guide plans" - master plans for village development, covering planning of physical development and expansion of the village, land use and construction licensing. In the implementation phase MOJ works with villages on upgrading roads, surveying lands within the plan and ceding them to the village, surface water drainage, road widening, communal spaces and facilities etc. Implementation of 140 "guide plans" had begun by 1990. MOJ also constructs a variety of other works in rural areas (see Box 7.2), using its own construction companies (now being privatized) and private contractors.

7.10 The physical achievements are considerable (see Box 7.2). The watchword of popular participation in construction and subsequent operation and maintenance is a useful link between responsibility and economic reality. The linkage of the construction program to MOJ's extension and popular participation effort and to the structure of Islamic Rural Councils is a useful one. Constraints are evidently the budget and foreign exchange situation, which have already begun to have an impact on the program. Also, the operation and maintenance of constructed facilities are apparently beginning to be a problem, reflecting the rapid expansion in the last decade. MOJ reports "big problems and delays" in road maintenance. There is also perhaps some lacuna in the arrangements for passing on responsibility to beneficiaries. For example, the number of villagers trained for operation and maintenance of water facilities is low in relation to the number of facilities constructed. Finally, linkages between these important physical developments and other rural development activities are weak. For example, contacts with MOA's ADSB, which carries out integrated investment and development planning for river basins, is limited to "exchange of information".

7.11 Recommendation. MOJ staff are well aware of the need to prioritize future actions within a more constrained budget, and to adjust actions in the light of experience. For the SFYP, MOJ intends to slow down the pace of construction still further and to concentrate on maintenance. The next decade will be one of consolidation, with a focus on sustainability, particularly on operation and maintenance. But the program should continue to receive high priority in view of the demographic pressure the country is experiencing (Chapter I). It is recommended that:

| Box 7.2: Achievements of MOJ's Rural Infrastructure Program |
|---------------------------------|-----------------|
| **Villages Served**             |                 |
| In 1980                         | In 1990         |
| Drinking water                  | 6,611           | 18,039 |
| Electricity                     | 5,000           | 15,680 |
| Roads                           | <8,000 km       | >60,000 km |
| Village Amenities               | 500             |         |
| (Total villages)                | 60,000          |         |
| **Other MOJ Construction 1980-1990** |
| Schools                         | 4,900           |
| Clinics                         | 320             |
| Mosques                         | 2,700           |
| **Source:** Annex 20            |                 |
MOJ transfer responsibility for operation and maintenance of installations as a priority

MOJ, with assistance from international NGOs and consultants, review the whole program and draw up a development plan. This could provide for external support for key needs, for example, for the road maintenance program.

D. Rural Industry

7.12 MOJ Support to Rural Industry. The campaign to promote rural industry is managed by MOJ's Department of Rural Industry (DRI). DRI has about 1,430 staff, of whom 282 are graduates. Up to 1992/3, DRI received a foreign exchange allocation each year. In 1992/3, this allocation was US$ 55 million. Foreign exchange was for long at the official rate, more recently at the competitive rate. DRI activities include licensing of new businesses, studies and promotion. During implementation DRI provides assistance in obtaining credit and foreign exchange and in procuring equipment and raw materials. DRI also provides training, technical assistance and support to marketing. A special unit provides extension to the carpet weaving industry. DRI manages a program of rural industrial estates. The concept is a sites and services one. Entrepreneurs pay 5% of the capital cost of the utilities as a contribution towards site development.

7.13 Evaluation. Small-scale industry is important in Iran. Overall it accounts for 51% of industrial employment in the country, and is less capital and import intensive than large industry. There is a long tradition in rural areas of artisanal production of carpets and other handicrafts. A well-managed rural industry program could suit government's development objectives and Iran's comparative advantage very well. However, it is not clear that current activities exploit the advantages to the best. The projects visited were sometimes quite capital and import intensive. The cost per job created was between US$ 3,000 and US$ 7,000, which is high. The rate of development has been quite slow - 527 factories and under 5000 jobs in the FFYP period. MOJ resources (1,430 staff) seem disproportionate to the results. Current activities have also clearly relied heavily on planning and control made easy by the state's ability to allocate credit and foreign exchange. This has reduced private initiative and ownership.

7.14 The program needs to be reappraised. Enterprises will face shifting incentives as relative prices change, and it is quite probable that some existing
or planned enterprises may no longer be profitable as the cost of credit and foreign exchange moves to market levels. Incentives will shift more to enterprises based on local raw materials, on technologies that use local labor if it is reasonably priced, and on export market prospects. These shifts are precisely in line with government’s policy objectives, and will represent one of the benefits to be expected from structural adjustment. The transition will need care, however, as the rural industry program cannot afford to experience wholesale bankruptcies if it is not to lose credibility.

7.15 The spectacular success of rural enterprises in China, where output has been doubling every three to four years and hundreds of thousands of new firms have emerged each year, shows the potential for rural industry. Iran’s historic tradition of artisanal production, the discipline and skill of its inhabitants and the rapid growth of the rural population (Chapter I) argue for a strong rural industry development program. Government’s role will shrink as credit and foreign exchange become subjects of market transactions, and the focus of government’s intervention in industry should shift from direction to support. It is recommended that:

- future Government support be focussed on providing information, training and help with marketing - finance and procurement services should be provided by the market.
- an evaluation be conducted of the industrial estates program, focussed on total cost per job created and the impact and prospects of the program.
- a program be established, perhaps with seed money, to encourage private sector promotion of rural enterprise. This program could work through foundations, chambers of commerce, etc.

E. Nomad Support

7.16 Nomadism In Iran. There are about 1.2 million pastoral nomads in Iran (180,000 families). The nomad population halved from 1960 to 1980 but has subsequently remained more or less constant. The predominant economic activities are livestock rearing and handicrafts, largely carpet weaving. Over the last half century, economic forces have brought pressure on the nomad way of life. Through the Nomadic People’s Affairs Organization (NAO), Government provides services to help sustain the nomad way of life, and also to help nomads who wish to settle. Now part of MOJ, NAO has over 2,300 staff in three executive departments - Infrastructure, Animal Husbandry and Cooperatives. There are 241 nomad cooperatives, with 2,000 stores, 19 provincial unions and one national union. The movement has 233,355 members, which covers a total family population of 1,322,120.

<table>
<thead>
<tr>
<th>Box 7.4: NAO Budget 1992/3</th>
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<tr>
<td></td>
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<tr>
<td>Recurrent: 3.4</td>
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<tr>
<td>Investment: 12.6</td>
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<tr>
<td>US$15.3 million</td>
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<td>Source: Appendix Table 4.1</td>
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For nomads who wish to retain their traditional way of life, NAO provides a series of support services usually through cooperatives - (i) veterinary services provided through over 100 mobile teams and veterinary clinics; (ii) fixed infrastructure, notably water supply and stock trail improvements; (iii) sheep fattening and carpet weaving support programs. Services are delivered by mobile teams moving with the nomads along their seasonal migration routes. Parallel programs are run by the Ministry of Education (notably the justifiably famous "tent schools"). For nomads who wish to settle, NAO is preparing a settlement program that will be implemented over twenty years beginning under the SFYP. NAO insists on the fully voluntary nature of the program and also on the need for financial and physical participation by the settling nomads.

Issues. The following issues are important:

- Government proposes, beginning under NRDP, to make a substantial once-for-all investment in settlement; it is legitimate that the capital costs of this program be financed in part on Government resources. Subsidies of recurrent costs - notably the feed program - should be carefully scrutinized to determine if the proposed settled economy can achieve long-term sustainability without subsidy.

- There is fragmentation of responsibility between different Government departments - in rangeland management, for example, NAO is not responsible - this is rather the job of the Range Management Service (Chapter VI). The proposals for creating Coordination Committees under NRDP may go some way towards resolving this issue. For the settlement program the problem is more acute, as this requires cooperation between MOJ and MOA. This is another activity that would benefit for the fusion of MOA and MOJ services proposed in Chapter X. Working level cooperation will begin on a project basis in RLDP.
Chapter VIII - Marketing and Processing\(^1\)

A. General

8.1 In the agricultural sector, the marketing and processing of fruit and vegetables, rice, minor cereals and pulses, cotton and animal products are largely in the hands of the private sector. Government remains dominant in the marketing, processing and pricing of key food crops including wheat, sugar, oilseeds and tea. Government’s current economic policy is to liberalize pricing and marketing, and privatize most production, processing and marketing activities currently managed by public or parapublic institutions. The scope for privatization and price liberalization in these industries varies on a case-by-case basis, depending on their economic and financial viability and the extent of consumer and producer subsidies.

B. The Scope for Liberalization and Privatization of Marketing Channels

Industrial Crops

8.2 Systems for marketing and processing of the industrial crops share several characteristics. The crops are grown in an environment of distorted input and output prices introduced in order to promote self-sufficiency (see Box 8.1). There are quantity restrictions on imports and subsidies on consumer prices. Parastatals are necessarily involved in order to administer the pricing and subsidy systems. For several crops (except sugar) past investment drives have left industrial over-capacity. For some crops (e.g. rainfed sugarbeet), there is some doubt about their long term viability, which limits the scope for liberalization and privatization.\(^2\)

8.3 Oilseeds are grown by private farmers and purchased at a guaranteed price (determined by the Government) by the Oilseeds Company, which also provides extension and inputs. Domestic production meets less than 10% of national consumption. Industrial capacity utilization is low: domestic production as a percent of total crushing capacity is 15-30% for cotton seed and 50-60% for others; the industry has survived by refining imported crude oil. There are 24 private crushing plants, which also process imported crude oil. These plants are shareholders in the Oilseeds Company, a private company. However, the Government

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\(^1\) This chapter, and Chapter IX, draw on the analysis and recommendations in the World Bank Industrial and Mining Sector Study (March 31, 1993).

\(^2\) See DRC analysis in Chapter I and Appendix III.
intervenes in the oilseeds and oil prices. Imported crude oil is sold through rationing and the Oilseeds company is compensated for costs and some profit. Oil from domestic oilseeds production is sold on the free market.

8.4 **Sugar** is grown by private farmers (beet) and by parastatal agribusinesses (beet and cane). Nationalized mills provide extension and inputs to farmers and purchase the crop at a set price. Government has an ambitious plan to build an additional seven sugarcane factories. The respective advantages of beet and cane need to be carefully studied. Government's involvement in financing the capital costs of the sugar estates (and perhaps buying their product at a sub-market price) might also create continued distortions in the domestic market price of sugar. This could make liberalization and privatization more difficult in the sugar sector. **Tea** is grown by private farmers and purchased at a fixed price by the Iran Tea Organization, which also provides inputs and extension. The economic viability of tea looks doubtful. At present, the seven Government-owned tea factories are up for sale, but are unlikely to find buyers until the tea subsector is liberalized. The only industrial crop which enjoys some measure of liberalization is **cotton**, where private and public ginneries compete to buy farmers' production. At the present level of production, the country is basically self-sufficient but due to heavy investment in the past, ginning capacity is underused (utilization is about 45-50%). The comparative advantage of Iran for cotton production is obscured by import quantity restrictions and by the subsidies on inputs. However, DRC analysis (Chapter I) indicates good long-term prospects.

8.5 **Recommendations.** In view of doubts about the competitiveness of some crops, a phased approach is recommended. First, a review of the viability of each of these industries needs to be conducted. This would provide a basis for a number of decisions:

- on whether there is a case for protection of domestic production at the present stage of its development. Protection, if necessary, should be effected through import tariffs rather than quantitative restrictions. (Note: The new Trade Bill now before the Majlis proposes this solution).

- on the relative advantages of sugarcane and sugarbeet (in relation to imports and to each other). Pending this discussion, plans to develop cane factories should be shelved.

- on pricing of tea, to liberalize - or at least to allow quality differentials.

- on the development of the cotton subsector where apparently favorable economic prospects are clouded by technical problems with pest control. A research agenda is indicated.

- on closing of excess industrial capacity.

At the same time, in order to get the prices right, consumer subsidies need to be removed. If maintained, they should be introduced at the consumer level, so
that domestic and imported produce are on the same footing. In a second phase, the privatization of the parapublic companies involved can be considered.

**Food Crops**

**8.6 Wheat.** As long as the subsidy on bread is maintained, scope for privatization of wheat marketing will remain limited. Some private purchase and milling of wheat apparently began in 1993 to satisfy bakers' requirements for confectionery and pastry production which do not benefit from subsidy. Greater privatization of wheat marketing can be envisaged as Government phases out the bread subsidy over the SFYP period and replaces it by targeted subsidies limited to vulnerable groups.

**8.7 Rice.** Government involvement in domestic procurement and distribution of rice is presently minimal. Prices are attractive and there is adequate private milling capacity. Seasonal price fluctuations are in line with storage and financing costs. The number of dealers and millers is apparently large enough to give a choice to the producers. Overall, rice marketing is efficient and producers and consumers are adequately served at little or no cost to the Government.

**8.8 Other Grains.** Government has been heavily involved in the barley trade. In 1990/1, Government procured a total of about 650,000 tons of barley locally, and imported a further 650,000 tons. However, Government has announced that in future the trade will be left to the private sector, and MOJ's feed operation will be privatized. Imports of maize, mainly for animal feed, are substantial - 1.5 million tons in 1991. This, too, is to be privatized.

**Fruit and Vegetables**

**8.9 Marketing efficiency for fresh fruit and vegetables is low, as the necessary infrastructure is underdeveloped and investment has not kept pace with production.** There are shortages of cold storage and refrigerated trucks, activities dominated by parastatals which are unreliable and expensive. This has been a constraint to exports, which have concentrated on non-perishable products. Losses are very high, estimated at about 40%, and fresh produce is generally sold ungraded. The technological level in the processing industry is variable. Foreign exchange allocations for investment at preferential exchange rates have gone mainly to parapublic and cooperative organizations. Although the Government's Export Promotion Center does provide some useful information and promotion services, exporters need more information on foreign market opportunities and requirements.

**8.10 Recommendation.** Government should work with the private sector on a market development program for fruit and vegetables. Components could include: a market information system; common quality standards; the promotion of Iranian exports on external markets, etc.
PART THREE - PROPOSALS

Chapter IX - A Greater Role for the Private Sector

A. General

9.1 Increased competition and flexibility, with resulting efficiency gains, are the main justifications for liberalization and privatization. Competition forces operators to minimize costs and improve the quality of their services, and the greater mobility and adaptability of the private sector allows quick adjustments which are more difficult to achieve in the public sector. The Study has described Government's comprehensive approach to services - the philosophy has been that Government can and should do almost everything. Some of these services could more appropriately be provided by the private sector - input supply and mechanization (Chapter V), animal breeding and veterinary services (Chapter VI), the wood and fishing industries (Chapter VI), and marketing and processing (Chapter VIII). There are also some activities where public and private services could complement each other, reaching different market niches or providing stimulus through competition - research and extension (Chapter IV), agricultural credit (Chapter V), technical training (Chapter IX). This chapter proposes a strategy to increase private sector participation.

B. Policy Preconditions

9.2 The first step to promoting private sector participation is to maintain macro-economic and sector policies that foster competition and promote private investment. Private services can only operate in an environment of supportive macroeconomic policy and enabling legislation and regulations. Recent macroeconomic adjustments and the overall legal framework are generally conducive to private investment. The ongoing liberalization of the exchange rate system and of external and internal trade, including the removal of subsidies and quantitative restrictions on imports and exports, will play a key role for agriculture.

9.3 Effective competition requires that all operators have equal access to the market. At present, Government-supported agencies benefit from access to interest-free working capital. Effective liberalization and privatization of marketing arrangements will require improvements in the availability of credit for traders. Another major source of discrimination for processing activities has been the allocation of foreign exchange at preferential rates. With the unification of the exchange rate, this source of inefficiency and discrimination between enterprises should disappear. More generally, all types of enterprise should be subject to the same rules and regulations. At present, there is a bias in favor of public enterprises. Public enterprises, foundations and rural cooperatives should operate on a fully commercial basis under the same competitive environment as the private sector, without undue government interference or subsidies and in a transparent and accountable manner.

9.4 At the sector level, the program of liberalization, including the removal of subsidies and price controls, is a necessary precondition to private sector
interest in activities like extension and input supply. For input supply, the present controls on entry (licensing of new firms) and the privileged access by parastatals to domestic production and to imports would have to be abolished before the private sector would be interested (Chapter V). As a complement to this enabling environment, Government should define its objectives and policy for each subsector in order to define the roles of public and private sectors and to program investments or privatization as required. The SFYP (Chapter III) provides an appropriate medium for a statement of Government proposals, which would then allow the private sector to plan accordingly.

9.5 In some cases, specific legislation is required to protect private sector rights before any interest is likely to be expressed. This would be the case for intellectual property legislation for research (Chapter IV), and breeders' rights legislation for seed production (Chapter V). It is also essential that, when public and private services are both offered, public sector tariffs are set at levels that do not compete unfairly with the private sector - for example, tariffs for veterinary services (Chapter VI).

G. Privatization of Parastatals

9.6 Production. Government's current economic policy is to privatize most production, processing and marketing activities currently managed by public or parapublic institutions. This is in line with international experience that privatization improves welfare significantly, as has been found in countries as diverse as Chile, Malaysia, Morocco and the UK.¹ Already over 200 enterprises have been privatized, and Government has created a Ministerial Privatization Committee to oversee implementation of the program. In agricultural production, Government runs extensive agrobusiness interests and is proposing further investments in the sugar sector. At present, these businesses compete unfairly with private farmers as they have privileged access to credit and inputs. They could be run as well or better as companies in private hands, and their privatization should be a priority. During 1993, Government began to offer enterprises for sale, but the response has been slow². The experience underlines the need for a case by case approach, and careful study of the project before selecting the method of privatization. New sugar estates are unlikely to be a good investment for the country. In Chapter VIII, a study of the relative advantages of beet and cane and of Iran's comparative advantage in sugar production is proposed. Investments in the new plantations should be postponed pending this study. Government enterprises in fisheries and forest industries are early candidates for privatization.

9.7 Marketing and Processing. Government enterprises are dominant in marketing and processing wheat, sugar, oilseeds, cotton and tea. The scope for

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¹ This experience is analyzed in detail in the World Bank report "Iran: Industrial and Mining Sector Study" (March 1993), which contains a full description of the privatization challenge for Iran, and recommendations on how to pursue the process.

² For example, Djoroit Agroindustry was advertised for sale but elicited no response. Reasons suggested for lack of interest include overstaffing (650 personnel where 200 could do the job) and exclusion of foreign interests even on a joint venture basis.
privatization and price liberalization in these industries varies on a case-by-case basis, depending on their economic and financial viability and the extent of consumer and producer subsidies. A series of studies has been proposed for the industrial crops (Chapter VIII) which will identify the appropriate protection regime. Once this is established, the process of liberalization and privatization should begin.

9.8 Inputs. In input supply, the scope for privatization is considerable, both of production and of marketing enterprises - fertilizer, pesticides, tractor production and distribution, feed production and marketing.

D. The Private Provision of Formerly Public Services

9.9 Where the economic and legal frameworks exist, the participation of private agents in service provision should be encouraged. This can be by a variety of means:

- **contracting** public services to private agents, for example some research (Chapter IV), meat inspection and compulsory vaccination (Chapter VI), forest inventory (Chapter VI), rural infrastructure (Chapter VII).

- **promoting** the development of private institutions and services, for example, technical training by industry bodies (Chapter IV), cooperative marketing and input supply (Chapters V, VIII), private soil laboratories (Chapter V), trade organizations providing support to market development (Chapter VIII).

- making it **profitable** for the private sector by increasing charges, for example for seeds and for agricultural credit (Chapter V) or for veterinary care by the public service (Chapter VI), to levels that would be attractive to new private sector entrants.

- **transferring** public programs to private hands. The scope is substantial for artificial insemination (Chapter VI).

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3/ This is already practiced for studies, which are commonly contracted to consulting firms.
Chapter X - Development of Public Services

A. The Future Role of Public Services

10.1 Under the announced adjustment program and following the recommendations made in this Study, Government’s future role in the agriculture sector will evolve into a strategic one, limited to: the policy framework, planning and the allocation of public revenues, natural resource management, much of research, extension and plant and animal protection, rural development, manpower development and social monitoring.

10.2 The revised role for the public sector puts the emphasis on improvement in the remaining public services. From the discussion in the Study it will be evident that public services to the rural sector in Iran are quite comprehensive in their coverage. Material and financial constraints exist but are not very prominent and staff are generally skilled and committed. Technical standards are good but have suffered from the isolation of the country for the past decade, which puts a priority on renewing international links. However, there are significant constraints to services achieving their objective of improving the productivity of the Iranian farmer. The service-by-service constraints have been analyzed in Chapters III to VIII; this chapter examines some of the general issues constraining public agricultural services.

B. Reorienting Public Institutions

10.3 As the economy gradually adjusts to a market-based system, the ministries will need to evolve, directing resources away from the old control and command functions towards services responsive to producers’ needs. The SFYP provides an opportunity for Government to take decisions and to allocate the appropriate resources. With the new organigrams approved in April 1993, a start has been made. The next step is a process of study to prepare staffing plans, job descriptions, a training needs analysis and human resources development plan, and a program for developing facilities.

10.4 A particular challenge is to ensure that all essential services are provided in a coordinated and cost-effective way. There are some areas which are neglected - for example, small farm production systems, traditional irrigation, on-farm water management - and there are areas like extension and education, physical planning and watershed management where there would be significant gains from closer cooperation among public institutions. Building cooperative mechanisms is perhaps the most difficult challenge, as cooperation does not come easily among autonomous public institutions (MOA, MOJ, MOE), nor between services within the same institution (research and extension, for example). The best solution would be reorganization to bring services into a coherent framework that addresses farmer needs and national needs of sustainable development in a cost-effective way. As a minimum, there should be unification of:

- research and extension services, preserving the best of both (Chapter IV)
- livestock, forestry and crop production services (Chapter VI)
• planning and management of land and water resources

Options for achieving this fusion include the reintegration of all these services under an existing ministry - research, extension and commodity services under MOA, land and water resources under MOA or MOE. MOJ's particular mission in rural development would be untouched by these changes.

10.5 These institutional changes need to be accompanied by the maximum of decentralization to local level coordination structures (the provincial level has several coordination committees), with emphasis put on joint activities, like MOA's Joint Projects (Chapter IV). This needs to be linked to the mobilization of effective participation and demand through farmer organizations like cooperatives (Chapter V) and other groups (Chapter VII).

10.6 Within public institutions, there will be a need for different skills and programs. Within the planning function, skills in economic analysis will be required as comparative advantage becomes the basis for policy making (Chapter III). Government will increase its planning and guardianship for physical resources and will require skills to ensure environmentally sound and sustainable development. Social and economic monitoring will also be increased in order to predict effects of adjustment on the rural population (Chapter III). Above all, skills in fieldwork and in interacting with farmers will be called for.

10.7 A corollary to these changes is the need to reassign, retrain and lay off staff. A comparison between the present higher level staffing of MOA and the staffing of core public services (Box 2.2 in Chapter II) suggests that little more than a third of present posts would exist within the public service if all the recommendations in the Study were followed. Many posts will move to the private sector (e.g. input supply), but some may be redundant. The staffing review proposed above should identify posts that will be suppressed, match as many staff as possible (with appropriate retraining) to existing or new jobs in the public service, and make adequate provision for those transferring out of the public sector.

10.8 Finally, the new orientation of services needs to find a voice through the growth of an information culture. MOA and MOJ need to disseminate information freely both within Government and, most importantly, to farmers and the general public. Key organs for communication include the research/extension/education complex, the policy studies and statistics complex, and programming and budget. However, all departments should have a mandate to provide information and outreach services.

C. The Costs and Financing of Services

10.9 As the adjustment process proceeds it will bring changes in prices and it will be necessary to keep the costs and financing of public services and investments under careful review.

10.10 The total bill to Government for its services to the rural sector is considerable - Rls 1.7 trillion (US$ 1.1 billion), equal to 12% of agricultural
GDP and 15% of Government spending. Public finances are likely to be constrained in order to contain inflation. The cost of public services will also go up with the move to market-exchange rates and with the generally high inflation. It is, therefore, advisable that Government prioritize its spending on the most productive programs that are of an essentially public service character, encouraging the maximum private sector delivery and trimming down programs that are less cost-effective. Candidates are subsidies of all kinds, which should only be retained where the objective is clear and of sure economic benefit or social priority; investments in production, processing and marketing (Chapter VIII) like the sugar estates, which are better left to the private sector; and the rural infrastructure and rural industry programs (Chapter VIII), which have benefited from exchange rate "subsidies" - the challenge will be to identify the cost-effective parts and ensure that they are fully funded as relative prices change. In order to ensure that the full range of public expenditures on the sector is captured and that expenditures can be compared and prioritized, it is recommended that a Public Expenditure Review be carried out for the sector; the Bank could assist in this task.

10.11 On the financing side, current initiatives in cost recovery (e.g. for irrigation water), cost sharing (e.g. for infrastructure), and community participation (e.g. for soil conservation) indicate ways of reducing the burden on Government and passing on market signals to public services. The maximum emphasis should be given to increasing cost recovery - e.g. payment for veterinary services (Chapter VI), cost sharing - e.g. in rural development investments (Chapter VII), and maximizing community participation - e.g. in soil conservation programs (Chapter VI). Side benefits in seeking greater contributions will be market signals that will alert Government to which services are most valued, reduction in wastage, and an increase in a sense of ownership amongst beneficiaries.

D. **Empowering the Farmer**

10.12 In the past, many farmer services were planned centrally and delivered top-down. The ministries were involved in price fixing and resource rationing, and much time was devoted to administering allocations better left to the market, such as cropping patterns and the use of inputs. With the new economic orientations now coming into play, there is awareness of the need to make services more farmer-responsive and to help development of farmer institutions like cooperatives. Changes have begun - for example, MOA's Joint Projects, MOJ's community extension and popular participation initiatives. At the same time there is recognition of the need to decentralize public services as far as possible so that they can respond to local situations. Progressive evolution of all services in these directions will be an important challenge for the next few years.

10.13 **Bottom-Up Approach.** At present, agricultural services are to a large extent harnessed to centrally determined production policy. Seed and fertilizer supply and extension advice are concentrated on cereals production, even where this is not of interest to farmers or economically the best option. In the future, services should be concentrated on crops and themes that economic
analysis shows to be high priority in each region. The farmer should be a partner in this process, too; his voice should be heard in the reorientation of services. The mapping of these changes has been a principal focus of this study - research and extension (Chapter IV), input supply (Chapter V). Clearly, these adjustments require considerable cultural and institutional changes - research, extension, input supply have to learn to respond to demands from farmers and to learn new diagnostic and participatory techniques, economic analysis has to be built into agricultural programs, decisions on the composition and financing of services and programs have to be decentralized to discrete agro-ecological zones.

10.14 Farmer Organization. There has been little attempt to help the emergence of autonomous rural organizations. There are traditional producer organizations but they are poorly integrated into the relationship between public services and farmers. The cooperative movement has become an arm of Government for input supply and produce procurement. The potential of farmer groups and cooperatives has been a theme of this Study - as partners of research and extension (Chapter IV), as partners in rural development (Chapter VII), as farmer-level marketing operations (Chapter VIII). The promotion of such groups within a genuinely autonomous framework, with a limited supportive and enabling role for the Government, should be a priority.

10.15 Decentralization of Ministry Services. MOA has made an effort to decentralize. Of total higher level staff (47,800), only 15% work in head offices, and 85% work in the provinces and the field. The planning and budgeting system puts about half of recurrent resources and a quarter of investment resources under the control of the provincial units. In 1993, MOA has further decentralized, bringing together currently independent provincial branches of central services (research, seed production, fertilizer distribution) under the Provincial Agricultural Departments. This process is worth reinforcing with the maximum delegation of authority and resources to provincial and local levels, increased inter-agency cooperation at the field level and more empowerment of the cooperative structure.

E. Targeting Services

10.16 As the better-off farmers respond to market incentives, the focus of Government programs should shift increasingly to smaller farmers, poorer areas and specific target groups. This shift has already begun - for example in the extensive rural infrastructure program, in the focus on deprived areas for development programs, in the orientation of some research towards improvements based on traditional technology, in the programs for nomads. Continuation of this shift will be a necessary accompaniment to the structural reform process.

10.17 Agricultural services during the war period were de facto targeted by the emphasis on maximizing output of strategic commodities. This gave an automatic bias towards farmers best endowed to meet production targets of this kind. Typical is the "Six Tons Club" of larger, highly mechanized and input intensive

1/ See ASN, Annex 6, Attachment 1.

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cereal farmers. The FFYP was very much a production-maximizing document - equity and poverty alleviation are not mentioned as goals for the agriculture sector. The small farmer was largely neglected, although the rural development program had a countervailing impact, benefitting communities with prospects of long-term economic viability. The SFYP provides an opportunity to revisit policy and to refocus programs. Given that larger farmers will be increasingly served by markets, there is an opportunity to shift the emphasis of public services towards smaller farmers, poorer areas, improving the productivity of women’s farming and of traditional systems. This shift is in line with Iran’s comparative advantage - the best returns are available in low cost productivity improvements by a large number of small farmers (Chapter IV) - and will contribute to poverty alleviation.

10.18 A necessary function of Government during the adjustment period is to protect vulnerable groups in the population without distorting economic incentives. The impact of changing relative prices on the poor will be cushioned by the safety net, which is required in rural areas as soon as possible. The introduction of the safety net should smooth the transition for vulnerable groups of the population.
Chapter XI - Investment Proposals

11.1 A revised role for the public sector puts the emphasis on improvement in the remaining public services. Many recommendations have been made throughout this study on how to accomplish this improvement. Some of these require simply a policy decision, many require studies, most require some kind of investment. This chapter lists potential projects, components and studies for Government and donor financing, based on the Study. Support to livestock, rangeland and fisheries services is not listed, as this is already provided under RLDP.

11.2 A program to develop services for farmers with a particular focus on small farmers is top priority. This program would reinforce essential public services, redirecting them towards the neglected smaller farmer and developing the farming systems approach. The program should include support to research (master plan, human resources development, facilities, research grant scheme, joint projects); to extension (information policy, human resources development, equipment, pilot projects); and to development of farmer organizations (cooperative development, traditional groups).

11.3 Priority should also go to the inputs sector, where assistance should be given to the process of transfer to the private sector, and where there is a need for reinforcement of Government's residual role. The program could assist the chemical inputs business, including the privatization process for the Fertilizer Company, the parastatal pesticide formulation firms and SASC; support to the development of a fertilizer institute; promotion of private soil laboratories; and development of the PPO within a revised legal framework. The program could also focus on development of a national seed industry within a seed policy and strategy. Following legislation to protect breeders' interests, the program could support private participation in seed production, and reinforce public capacity in producing foundation seed and in quality control. A third component could help the process of privatization of the equipment manufacturing and supply business, and help build structures for research and coordination in mechanization.

11.4 A further priority would be a program to assist the process of adjustment. This would include investments in the institutional development of MOA and MOJ, including a study of the structure of MOA and MOJ, preparation of institutional development plans; a Public Expenditure Review for agriculture; support to planning, policy analysis, information and statistics; studies of privatization of parastatals; and studies of the industrial crop subsectors.

11.5 A fourth area for investment could be in horticulture development, where substantial growth is expected and where MOA's recent reorganization has set up an institutional framework for commodity specific services. Components could include upstream services in research and extension and downstream services in

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1/ A full list of project ideas is given in Appendix 4.
market development. Priority should be given to development of sustainable private services.

11.6 Other project ideas require more analysis before they can be defined. Support to rural financial markets would require further financial sector liberalization, but the upcoming rural financial markets study could identify areas of potential. Development of informal and semi-formal financial markets could be rolled up into the support to farmers organizations proposed above. Support to rural development is a priority given the high rate of population growth and the risk of very rapid urbanization. It could be possible to identify support to a long term plan for rural infrastructure and to a program to promote the development of rural enterprises.
### IRAN: Services For Agriculture and Rural Development Study

#### Summary of Recommendations

<table>
<thead>
<tr>
<th>Chapter Reference</th>
<th>Action</th>
<th>Type of Action</th>
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<tbody>
<tr>
<td>III. Policy Analysis and Resource Allocation</td>
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<td>F. Issues and Proposals</td>
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<tr>
<td>- develop an information culture</td>
<td>Policy/Investment</td>
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<tr>
<td>- sharpen analysis of public spending</td>
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<tr>
<td>- develop economic and socio-economic analysis and planning skills</td>
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<tr>
<td>- integrate planning and resource allocation functions for rural sector</td>
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<tr>
<td>- prepare remote sensing master plan</td>
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<tr>
<td>- rationalize allocation of responsibilities for agricultural statistics</td>
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<td>IV. Farmer Information</td>
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<td>B. Agricultural Research</td>
<td></td>
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<tr>
<td>- clarify mandates of the different institutions</td>
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<tr>
<td>- get MOA and MOJ working together in practical projects</td>
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<tr>
<td>- develop a research policy and master plan</td>
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<td>- introduce MIS and external review</td>
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<tr>
<td>- reinforce links with IARCs</td>
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<td>- encourage private sector research, inact intellectual property legislation</td>
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<td>- implement a human resources development plan</td>
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<td>- improve conditions for staff</td>
<td>Policy/Investment</td>
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<tr>
<td>- introduce a research grant system</td>
<td>Investment</td>
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<td>- upgrade facilities</td>
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<td>C. Agricultural Extension</td>
<td></td>
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<tr>
<td>- move to a Farming Systems Approach</td>
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<tr>
<td>- prepare an agricultural information policy and an action and investment plan</td>
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<td>- help grassroots farmer organizations to develop</td>
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<td>- involve farmers in planning, implementation, monitoring</td>
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<td>- use diagnostic and rapid rural appraisal techniques</td>
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<td>- deliver programs by highly geared least-cost methods</td>
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<td>- implement a human resources development plan</td>
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<td>- create an extension support group</td>
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<td>- prepare agricultural information policy</td>
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<td>D. Women, Extension and Agricultural Services</td>
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<td>- mainstream efforts to help rural women</td>
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<td>- improve the database</td>
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<tr>
<td>- improve training</td>
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<td>- make research and extension relevant</td>
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<td>E. Technical Training</td>
<td></td>
<td>- conduct tracer studies, review policy, organization demand and value for money</td>
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<td>V. Inputs</td>
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<td>B. Fertilizer</td>
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<td>- move to border prices as soon as possible</td>
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<td></td>
<td>- privatize the Fertilizer Co.</td>
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<td></td>
<td>- replace licensing of firms with registration on demand</td>
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<td></td>
<td>- place fertilizer imports on open general license</td>
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<td>- conduct a fertilizer sector study and workshop</td>
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<td>- prepare a sector development plan and training program</td>
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<td></td>
<td>- raise output price levels to border prices</td>
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<td></td>
<td>- promote private sector investment and competition, including soil labs</td>
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<td></td>
<td>C. Plant Protection</td>
<td>- adapt legislation</td>
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<td></td>
<td>- open up business to the private sector</td>
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<td>- prepare a development plan for PPO</td>
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<td></td>
<td>- develop integrated pest management</td>
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<td>D. Seeds</td>
<td>- prepare a seed policy and strategy</td>
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<td></td>
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<td>- increase seed prices to market levels</td>
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<td></td>
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<td>- introduce legislation to protect breeders' interests</td>
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<td>- study partial privatization of the Seed Company</td>
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<td>- encourage private sector participation</td>
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<td>E. Mechanization</td>
<td>- prepare a coordinated national strategy</td>
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<td></td>
<td></td>
<td>- privatize the parastatal manufacturers</td>
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<td>- privatize Bongah's commercial operations</td>
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<td></td>
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<td>- confine AERTTC testing to prototype equipment</td>
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<td>- revive adaptive research</td>
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<td></td>
<td>- set up a program of study and training</td>
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<td></td>
<td>F. Rural Finance</td>
<td>- set policy of deposit/lending rates for AB to cover costs</td>
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<td></td>
<td></td>
<td>- conduct the rural financial markets study</td>
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### Chapter

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<tr>
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<td>- prepare a five-year business plan for AB</td>
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<td>G.</td>
<td>Cooperatives</td>
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<td>- prepare a development plan</td>
<td>Study</td>
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<td>VI.</td>
<td><strong>Livestock, Forestry &amp; Fisheries</strong></td>
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<td>- privatize the breed improvement program</td>
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<td>- transfer feed production to the private sector</td>
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<td></td>
<td>- liberalize meat imports</td>
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<td>- improve hygiene standards</td>
<td>Study/Policy</td>
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<td></td>
<td>- increase cost recovery of veterinary services</td>
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<td></td>
<td>- develop private veterinary services</td>
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<td></td>
<td>- separate vaccine production from quality control</td>
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<td>C. Rangeland</td>
<td>- strengthen and enforce land use regulations</td>
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<td></td>
<td>- improve cooperation between MOA/MOJ</td>
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<td></td>
<td>- phase out subsidies on feed and concentrates</td>
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<td></td>
<td>- broaden research to monitor range conditions</td>
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<td></td>
<td>- provide information, education, extension for farmers, livestock owners</td>
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<tr>
<td>D. Forestry</td>
<td>- employ outside firms to accelerate inventory</td>
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<td></td>
<td>- privatize forest industry plants</td>
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<td></td>
<td>- focus forestry extension on priority areas</td>
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<td></td>
<td>- limit government to incentives and management support</td>
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<td>- give priority to ensuring sustainable maintenance in anti-desertification programs</td>
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<td>E. Fisheries</td>
<td>- privatize large-scale operations</td>
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<td>- concentrate public services on cooperative artisanal fisheries</td>
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<td>VII.</td>
<td><strong>Rural Development</strong></td>
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<tr>
<td>B. Popular Participation</td>
<td>- study traditional groups as basis for popular participation</td>
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<tr>
<td>C. Rural Infrastructure</td>
<td>- transfer responsibility for operations and maintenance</td>
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<td></td>
<td>- review achievements and prepare development plan</td>
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<tr>
<td>D. Rural Industry</td>
<td>- provide information, training, help, not finance</td>
<td>Policy/Investment</td>
</tr>
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</table>
Chapter Reference Action Type of Action
-evaluate industrial estates program Study
-establish programs to promote rural enterprises Policy/Investment

E. Nomad Support
-set up structures for institutional coordination Policy
-maintain cost-sharing and other incentives to ownership of programs Policy

VIII. Marketing and Processing

B. Liberalization
-study need for protection, use tariffs not quantity restrictions Study/Policy
-study relative advantages of sugar cane and beet before developing cane factories Study
-introduce quality differentials for tea Policy
-remove consumer subsidies on industrial crops Policy
-close excess industrial capacity Policy
-consider privatizing parapublics involved in industrial crops Study/Policy
-work with private sector on market development plan for fruits and vegetables Study

IX. A Greater Role for the Private Sector

B. Policy Preconditions
-create equal access to foreign exchange and credit Policy
-operate public enterprises without subsidies and in a transparent and accountable manner Policy
-introduce safety net for vulnerable groups Policy

D. Private Provision of Formerly Public Services
-contract public services to private agents Policy
-promote development of private institutions and services Policy
-raise charges for public services to make competition possible Policy
-transfer selected public programs to private hands Policy

X. Development of Public Services

B. Reorienting Public Institutions
-prepare institutional development plans for MOA and MOJ Study/Policy/Investment
-unify research and extension; livestock, forestry and crop production services; planning and management of
<table>
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<th>Chapter</th>
<th>Reference</th>
<th>Action</th>
<th>Type of Action</th>
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<tr>
<td></td>
<td>water and land resources</td>
<td>-decentralize to local level co-ordination structures</td>
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<td></td>
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<td>-plan according to comparative advantage</td>
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<td>C.</td>
<td>The Costs and Financing of Services</td>
<td>-carry out a Public Expenditure Review</td>
<td>Study</td>
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<td>-emphasize increasing cost recovery</td>
<td>Policy</td>
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<tr>
<td>D.</td>
<td>Empowering the Farmer</td>
<td>-reorient services in line with comparative advantage, interests of farmers</td>
<td>Policy</td>
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<td></td>
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<td>-make services responsive to farmers’ needs</td>
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<td>-promote farmer groups and cooperatives</td>
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<td>-decentralize public services</td>
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<td>E.</td>
<td>Targeting Services</td>
<td>-shift focus of government programs to smaller farmers, poorer areas, specific target groups</td>
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</table>
Appendices and Tables

Appendices

1. Reorganization of Services - April 1993
2. Land and Water Management
3. Domestic Resource Costs
4. Project Ideas

Tables

1. Key Human Capital Indicators
2. Subsidies to Agriculture
3. Trends in Cropped Area and Production
4. MOJ Budgets
Appendix 1

IRAN: Services for Agriculture and Rural Development

Reorganization of Services - April 1993

1. In April 1993, the Government announced a reorganization of MOA and MOJ. The new organization charts are attached. The rationale for the changes is said to be to bring services into line with the post-liberalization needs. One feature is the removal of a number of departments to become semi-autonomous "Related Organizations". Some of these may be privatized, for others the objective is greater freedom in management.

2. For MOA, the new structure has nine Deputy Ministries (DMs), the same number as before. The DMs for Administration and Finance and Parliamentary Affairs appear little changed. The Farming Affairs DM has lost its tutelage of the input supply organizations and area development agencies (some of which become "Related Organizations"), and has instead a number of services divided on crop specific lines. The old Agro-industries DM has disappeared - and the agro-industries have become "Related Organizations"; instead there is a Resource Utilization DM, responsible for land tenure and agribusiness. The Infrastructure DM, formerly preoccupied with small rural engineering works, now has responsibility for water management and on-farm development, filling a notable gap. The old DMs for Training & Extension, and for Research have disappeared - and the Research, Training and Extension Organization figures as a "Related Organization". The head of this organization has the rank of Deputy Minister. The objective is apparently to bring the three services under one umbrella with some autonomy of management. There is a new DM for Technology, whose attributes are apparently to promote the development of farm mechanization and agricultural processing and to transfer Government businesses in the sector progressively to private hands. The Horticulture DM, formerly a slim structure, now appears with four services specialized by type of crop. The Planning and Programming DM has new services dealing with organization and the financing of development investments. The old CRRAE, ADSB and Planning Department are all brought together under this DM. Completely new is the Market Regulation DM, covering marketing, transport and information - its functions will be largely in support of cooperatives, and it absorbs the old CORC (Chapter V).

3. MOA intends to combine the reorganization with decentralization of authority and resources. Under this policy, the Provincial Agriculture Departments (PADs) receive new responsibility for all MOA services in the provinces. The PADs will continue to report direct to the minister, as before. The Agricultural Bank no longer reports to MOA, presumably as a prelude to its conversion to an autonomous financial institution. The Fertilizer Company and Seed Company have been merged into an autonomous agency, the Agricultural Services Support Company, as a prelude to privatization.

4. The personnel implications are being worked out. No redundancies of higher level staff are expected, but there is a process of internal reassignment and retraining. It is intended over time to reduce the high ratio of support staff to higher level staff. Reduction of support staff will be effected through a hiring freeze coupled with natural wastage. Overall, MOA numbers will reduce through privatization.
5. For MOJ, the differences appear less striking. A number of semi-autonomous organizations were already outside the MOJ structure and this status is confirmed in the new organization - VO, FRO, NAO, Shillat (Chapters VI, VII) - are all "Related Organizations". By contrast, the research institutes which seem good candidates for semi-autonomous status, which they enjoy under MOA, are listed as MOJ services. The Fisheries Research Organization does not appear on the chart, whereas an Engineering Research Center does.
<table>
<thead>
<tr>
<th>Related Organizations</th>
<th>Description</th>
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<tbody>
<tr>
<td>Moghan Agro-Industrial Co.</td>
<td>Research, Training &amp; Extension Organization 1/</td>
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<tr>
<td>Haft Tappeh Sugarcane Co.</td>
<td>Plant Protection Organization</td>
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<tr>
<td>Djioft Agro-Industry Co.</td>
<td>Iran Tea Organization (ITO)</td>
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<tr>
<td>Shahid Rajai Agro-Industry Co.</td>
<td>Non-Urban Lands Organization</td>
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<tr>
<td>Sefid Roud Agr-Industry Co.</td>
<td>Agricultural Support Services Co.</td>
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<tr>
<td>Fars Meat Corp. Co.</td>
<td>Aircraft Special Services Co.</td>
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<tr>
<td>Central Organization for Rural Cooperatives (CORC)</td>
<td>Agricultural Machinery Bongah</td>
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<td>Sugarcane Dev. Co.</td>
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<td></td>
<td>Silkworm Prod. Co.</td>
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1/ Head has rank of Deputy Minister
Appendix 2

IRAN: Services for Agriculture and Rural Development

Land and Water Management

A. Land

1. Traditional Land Exploitation. Before the land reforms of the 1960s Iran was a country of large landowners; less than 5 percent of land was owned by peasants. The peasants had customary rights of using the village ploughland and water resources - nassagh rights. NassaQh rights gave access to fixed areas of different qualities of land, which could be scattered throughout the village; the plots were not, however, specific but could be reallocated each year. This system of cultivation rights was associated with a system of traditional groups, usually known as boneh, that worked together on farming and irrigation operations. The development of groups was favored by the need for operation and maintenance of the irrigation system and by the need for rational management of the quite small plots. The landowners encouraged the boneh as they made the management of the share-cropping system easier. Membership of the boneh gave access not only to the landlord's fields and irrigation water but also to village wells, woods and pastures. Usually the landlord provided three factors: land, water and seed, and got three fifths of the crop; the peasants provided two factors, oxen and labor, and got two fifths of the crop. The landlord also had general responsibility for securing and maintaining the irrigation network, providing credit and planning the production campaign. In contrast to the nassagh-holders, about 30 percent of the rural population were khoushneshin, landless - mostly laborers, but also peddlers, money-lenders, artisans etc.

2. Land reform. The successive land reforms of the 1960s and 1970s completely changed the character of Iranian farming. Peasant proprietorship became the norm - 96 percent of arable land is now owner-occupied - and the role of the landlord in providing management, inputs and credit disappeared. Some of this role was taken over by the Government - farmers were obliged to join cooperatives which were to provide inputs and credit, extension was organized to help with management. But some of the distinctive characteristics of Iranian farming can be traced to the reform and pre-reform eras:

- distributed farms were small, with a ceiling on holding size - 65 percent of farmers received less than 5 ha. As a result, the typical Iranian farm today is a small peasant holding.

- existing larger holdings persisted in a reduced form, so that today there is a "kulak" class of independent largeholders - 13 percent of farmers (350,000 families) own 40 percent of arable land. This class provides a critical share of output - farms over 10 ha

1/ This appendix, based on the working paper prepared by Mustafa Azkia for this Study, is intended only to outline issues that affect farming and agricultural services and to identify an agenda for further work on these very complex topics.
contribute 42 percent of agricultural value added and 77 percent of marketed output.

- ownership was distributed in proportion to existing nassagh rights and was not of a particular piece of land but a share of the total land distributed in the village - this form of "floating" ownership is called moshaa. In some villages the boneh informally allocated fixed plots to individuals, but in many areas to this day land is not individualized but reallocated annually by the boneh.

- about 40 percent of rural households did not receive land, leaving a very sizeable class of landless laborers.

- the cooperatives, and to a lesser extent the extension service, were created as administrative substitutes for a traditional system of service provision.

3. At this same time the state created a modern agribusiness sector, 238,000 ha of irrigated land operated by 15 large companies, both private and parapublic.

4. After the Revolution a new phase of land reform was initiated, with the objective of helping the landless. About 600,000 ha of land (often marginal) has been distributed to about 100,000 families. The process was originally managed by a revolutionary body called the "Seven Man Committee"; in 1984 this was incorporated into MOA's Land Affairs Department. Continuing support is provided through the Moshaa Production Cooperatives (Annex 17). At the same time the Government is pursuing an agribusiness strategy with the creation of new enterprises at Moghan and in Khuzestan, where seven sugar estates are planned on 84,000 ha.

5. Institutions. The Land Affairs Department in MOA is now incorporated in the Resource Utilization Deputy Ministry (Appendix 1).

6. Land Tenure. The dominant form of tenure is now moshaa, with individual freeholds also important; in total, 96 percent of land is now owner occupied. Leases exist, generally annual - rents for irrigated cereal land are Rls 100,000-150,000, for cash crop land Rls 200,000-400,000. Less prevalent is sharecropping. The old nassagh rights could generally be transferred to one male heir, so that there was inheritance but no fragmentation in cultivation rights. Land ownership was inherited according to traditional inheritance law - but the holdings seem to have been generally so big that there was no problem of fragmentation. After the land reform, both division of moshaa land on inheritance and its sale were prohibited in law. There is an informal market in land. Freehold land carried over from before the reforms could be cadastrally surveyed and registered and there is a formal market in this land, largely orchard.

7. Issues. The most important issues appear to be:

- fragmentation of holdings, which makes modern management and soil conservation more difficult. Government is encouraging solutions: common farming is promoted through the production cooperatives, but these have been costly and not very successful; and consolidation
through a program of formal support and investment - this program, despite ambitious objectives, has been very slow and again costly. There is widespread "informal" consolidation through purchase - this is particularly prevalent around cities where market gardening and suburban development push up land values - and by agreements brokered at the village level, often informally helped by the ASCs.¹

- credit access is difficult with the moshaa system. Recent legislation authorizes AB loans on moshaa collateral, but it is not clear that this will change much in practice.

- the moshaa system discourages investment in the land as there is no vested transferable title to a particular plot.

8. **Recommendations.** The encouragement of land consolidation is clearly important; equally clear is that formal projects are likely to be time consuming and expensive to little effect. What is needed is more support to the informal process; this could be provided in conjunction with MOJ’s village development activities (Chapter VII). Also needed is the development of a land market through the recognition of individual titles on former moshaa land and the promotion of cadastral surveys. These surveys could be provided by the private sector under Government control. A third recommendation is to review both the economics and the social appropriateness of the agribusiness developments in the light of Iran’s comparative advantage and rural development objectives, with either of which these capital intensive schemes seem little in harmony. Finally, Government could examine the case for privatization of the existing parapublic agribusinesses.

**B. Water**

9. **Resources.** Iran benefits from substantial water resources which have been developed for agricultural use over several thousand years. The ganat', often stretching for many miles, were painstakingly dug and maintained. Under the pre-Reform system the landlord provided irrigation water and the nassaq-holders cooperated in their boneh in operation and maintenance. After the reforms, the ganat system declined because responsibility for operation and maintenance was fragmented, and the labor-intensive maintenance became very costly. At the same time, Government assisted a rapid development of tubewells.

<table>
<thead>
<tr>
<th>Total Water Available for Agriculture (in billion m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ganat</td>
</tr>
<tr>
<td>Tubewells</td>
</tr>
<tr>
<td>Springs</td>
</tr>
<tr>
<td>Large dam schemes</td>
</tr>
<tr>
<td>Other modern schemes</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>

Source: MOE, 1992 Estimate.

²/ A 1985 survey showed that 24 out of 58 ASCs polled had assisted villages with this process, helping with planning, physical demarcation etc

³/ A ganat is an underground tunnel bringing water from a mountain aquifer to an agricultural area. Ganat are prevalent in central, south and east Iran where water is scarce.

m:\iran\irags\land-wa
10. **Institutions**. MOE (Chapter II) has overall responsibility for water for agriculture. MOE works through the Regional Water Authorities (RWA). Distribution and control of irrigation water is the responsibility of the Water Distribution Division in the RWA shahrestan office. On modern schemes, RWA runs a management unit which is responsible for operation and maintenance. There are some pilot attempts to privatize these units. For traditional schemes, RWA appoints and pays a "sarabyar" (water master) for each river or stream, who is responsible for controlling offtakes from the diversion bars (gordahan). Distribution of this water between villages (each with its water right or haqeb) is the responsibility of the abyar (water man), again an employee of RWA. Within the village, the headman (kadkhoda) is paid by the villagers to distribute the water and to organize maintenance. At the farm offtakes, the farmers may get together to employ a distributor (tilmai). Water charges are assessed by RWA and generally collected through the village structure. Wells and ganat are generally communally owned and are maintained by the beneficiaries. RWA is responsible for licensing and for monitoring extraction.

11. **Issues**. Irrigation development has been very slow, with only 60,000 net hectares of irrigated land coming into production 1979-1990. The pumping of groundwater, assisted by subsidies on pumps, credit and fuel, has damaged ganat viability, depleted the aquifers, and led to salt water infiltration in some areas.
Appendix 3

IRAN: Services for Agriculture and Rural Development

Domestic Resource Cost Analysis of Agriculture and Livestock

I. Overview

1. The Domestic Resource Cost is the ratio of domestic resources and non-traded inputs used in the production process, to the net foreign exchange earned or saved by producing the good domestically. If it is less than one, then the country has a comparative advantage (lower domestic than international cost) in producing the good; the net economic benefit is positive. If it exceeds one then the country would be better off producing something else that uses its domestic resources more efficiently.

2. Domestic Resource Cost Analysis was carried out using crop budget and livestock model data in the Staff Appraisal Report for the Iran Irrigation Improvement Project Annex I, II. To approximate varying land and yield conditions, crop budgets from Moghan, Zarrineh Rud, and Tajan were used; for traditionally irrigated rice only, a crop budget from Behbehan was also used. The simple Balassa method, using only the costs of resources directly applied, was used to aggregate costs. By way of comparison, financial costs and returns were also calculated; this ratio is less than one if profit is positive, and greater than one if profit is negative.

3. Several caveats apply. First, as in all DRCs, the analysis considers only economic efficiency, and not risk, welfare, distribution, or other policy goals. Second, caution should be used in projecting DRCs into the future. The crop budgets used are static: they show current input choices and output results given current prices and incentives. Should input or procurement prices change, then these quantities will change as well. Thus the DRCs provide guidance towards, rather than absolute measures of, future cropping patterns.

II. How the Figures were Calculated

1. Shadow and financial prices for all inputs and outputs except for land are shown below in Table 1.

2. The price of land was calculated in two ways. The financial price of rental land (100,000 rls rainfed, 400,000 rls traditional irrigated, 600,000 rls modern irrigated) was used as the shadow price of land and water together. The financial price for irrigated land was assessed at 2% of gross revenues, the "cost recovery charge" used by the government for irrigation projects.

3. The financial price of capital was taken to be 6% per year, and the shadow price at 13%. These figures are taken from Chapter 1, Box 1.7.

4. The price of foreign exchange was taken at the market rate of 1,500 rials to the dollar. Note that several of the nonviable crops (traditional
irrigated rice, modern irrigated alfalfa) will become viable if the rial falls in value to 1715 rls/dollar or greater.

Table 1:
Input and Output Financial and Economic Prices

<table>
<thead>
<tr>
<th>Output</th>
<th>financial price (rls/kg)</th>
<th>economic price (at 1450 rls/$)</th>
<th>Input</th>
<th>financial price</th>
<th>economic price</th>
</tr>
</thead>
<tbody>
<tr>
<td>wheat</td>
<td>158</td>
<td>307</td>
<td>Urea</td>
<td>19</td>
<td>223</td>
</tr>
<tr>
<td>barley</td>
<td>140</td>
<td>251</td>
<td>DAP</td>
<td>22</td>
<td>307</td>
</tr>
<tr>
<td>alfalfa</td>
<td>100</td>
<td>150</td>
<td>Pesticides (liter)</td>
<td>2000</td>
<td>3000</td>
</tr>
<tr>
<td>rice - amol</td>
<td>300</td>
<td>367</td>
<td>Seeds (varies)</td>
<td>(varies)</td>
<td>(1.5 * financial price)</td>
</tr>
<tr>
<td>tarom</td>
<td>396</td>
<td>441</td>
<td>Tractor (hr. equiv)</td>
<td>1000</td>
<td>1900</td>
</tr>
<tr>
<td>cotton</td>
<td>441</td>
<td>857</td>
<td>labor (m.d.)</td>
<td>3000</td>
<td>3300</td>
</tr>
<tr>
<td>sesame</td>
<td>1050</td>
<td>1170</td>
<td>land (ha)</td>
<td>(varies)</td>
<td>100,000 - 600,000</td>
</tr>
<tr>
<td>sugarbeet</td>
<td>37</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>apples</td>
<td>170</td>
<td>265</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vegetables</td>
<td>125</td>
<td>195</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>meat</td>
<td>1800</td>
<td>2900</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

III. Results from DRC Analysis

1. Figures 1 through 6 follow, showing economic and financial costs for each of three land types; the financial returns are shown twice, first valuing land at its shadow (rental) price, and then valuing land at 2% of gross revenues. The final figure shows DRCs calculated for various modes of livestock production (lamb and calf fattening, and traditional migratory herding).
Rainfed sugarbeet production has higher cost of tradeable inputs than value of output, thus the DRC cannot be computed (would be negative in value).
Traditional Irrigated Land
Land at 400,000 Nis/ha

Traditional Irrigated Land
Land at 2% of gross revenue

FIGURES 3/4
Appendix 4

IRAN: Services for Agriculture and Rural Development

Project Ideas

A revised role for the public sector puts the emphasis on improvement in the remaining public services. Many recommendations have been made in the Study on how to accomplish this improvement. Some of these require simply a policy decision, many require studies, most require some kind of investment. This Appendix lists potential projects, components and studies for Government and donor financing, based on the Study. Support to livestock, rangeland and fisheries services is not listed, as this is already proposed under RLDP.

Support to Planning (Chapter III), with the following components:

- reinforce physical planning, through training and equipment for ADSB, support to GIS and mapping, development of a remote sensing master plan and financing of investments
- reinforce policy analysis and economic and social monitoring, with a particular focus on poverty assessment, with training in microeconomic techniques, equipment and consultant studies
- reinforce statistics and information, including support to MOA’s Integrated Informatics Plan

Support to Research (Chapter IV), with the following components:

- prepare a research policy and master plan based on a farming systems approach and linked to the annual programming system
- draw up a human resources development plan and finance education, training and career development
- improve research management with computerized management systems and external quality control
- upgrade research facilities by replacing and upgrading laboratory equipment, machinery and vehicles, completing some installations and building up libraries
- study the appropriate legal framework for the protection of intellectual property
- finance a research grant scheme to promote university, non-Governmental and private research
- expand the program of Joint Projects
Support to Extension (Chapter IV), with the following components:

- prepare an agricultural information policy and investment plan
- conduct a skills gap analysis and finance the resulting training program, with a focus on diagnostic and listening techniques
- carry out pilot projects in the farming systems approach and then draw up and implement an extension strategy

Support to Chemical Input Supply (Chapter V), with the following components:

- study options for privatization of the Fertilizer Company, the parastatal pesticide formulation firms and SASC
- study a possible fertilizer institute, and support of its establishment, if worthwhile
- support establishment of private soil laboratories
- study the appropriate legal framework for the pesticide sector
- prepare and implement an adapted mandate and development plan for PPO, including upgrading of the pesticide residue laboratory and provincial quarantine facilities, and provision of an incineration plant.

Support to Seed Production (Chapter V), with the following components:

- develop a seed policy and strategy
- study legislation to protect breeders' interests
- study and implement ways of encouraging private sector participation, including partial privatization of the Seed Company
- reinforce public capacity in producing foundation seed and in quality control

Support to Mechanization (Chapter V), with the following components:

- develop a national strategy and coordination structure
- study options for privatizing ITM Co., ICM Co. and Bongah
- give AERTTC the mandate for mechanization research, and finance the development of the institution and the research program
- develop a program of scholarships, study tours and technical assistance
Support to Agricultural Credit (Chapter V), with the following components:

- carry out a rural financial markets study
- develop a policy and business plan for AB
- prepare a human resources development plan for AB, and finance education, training and career development

Support to Farmer Organizations (Chapter V, Chapter VII), with the following components:

- prepare a new cooperative policy, legal framework and development plan
- implement pilot cooperative development programs
- conduct a study of traditional farmer groups and their potential as partners in participatory development

Support to Forestry Services (Chapter VI), with the following components:

- accelerate preparation of inventories and management plans
- study and implement privatization of forest industries
- conduct a socio-economic study and pilot projects leading to a national forestry extension program

Support to Rural Development (Chapter VII), with the following components:

- prepare a long-term plan for rural infrastructure and finance the resulting investments
- evaluate the industrial estates program and set up a program to encourage private sector promotion of rural enterprise

Support to Marketing and Processing (Chapter VIII), with the following components:

- study the viability of the industrial crops (sugar, cotton, tea, oilseeds) and prepare a plan for tariff protection, rationalization of industrial capacity and possible privatization
- prepare a plan for market development of fruit and vegetables, including a market information system, quality standards and external market promotion.

1/ Already programmed with finance under the Irrigation Improvement Project.
Support to Institutional Development (Chapter X), with the following components:

- study the structure of MOA and MOJ, and prepare institutional development plans, including staffing plans, job descriptions, training needs analysis, human resources study and development plan, and a program for developing facilities.

- conduct a Public Expenditure Review for agriculture.
**Table 1**

**IRAN: Services for Agriculture And Rural Development**

Table: Key Human Capital Indicators for Iran

<table>
<thead>
<tr>
<th></th>
<th>Iran</th>
<th>Middle income economies</th>
<th>Middle East and North Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNP per capita (US$)</td>
<td>2,490</td>
<td>2,220</td>
<td>1,790</td>
</tr>
<tr>
<td>Population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Av annual growth of pop (%) (1980-90)</td>
<td>3.6</td>
<td>2.0</td>
<td>3.1</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life expectancy at birth - male (1990)</td>
<td>63</td>
<td>69</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>63</td>
<td>64</td>
</tr>
<tr>
<td>Nutriton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult illiteracy (%) (1990)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>46</td>
<td>22</td>
<td>47</td>
</tr>
<tr>
<td>female</td>
<td>57</td>
<td>27</td>
<td>60</td>
</tr>
<tr>
<td>Females per 100 males (1989)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>primary school</td>
<td>84</td>
<td>90</td>
<td>75</td>
</tr>
<tr>
<td>secondary school</td>
<td>71</td>
<td>105</td>
<td>68</td>
</tr>
</tbody>
</table>


m:\iran\irags\indicato.anx
## IRAN: SUBSIDIES TO AGRICULTURE

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantity</strong></td>
<td><strong>Subsidy</strong></td>
<td><strong>Value</strong></td>
<td><strong>Quantity</strong></td>
</tr>
<tr>
<td><strong>tons</strong></td>
<td><strong>Rls/kg.</strong></td>
<td><strong>Rls mil.</strong></td>
<td><strong>tons</strong></td>
</tr>
<tr>
<td>Imports</td>
<td>962,000</td>
<td>260</td>
<td>250,120</td>
</tr>
<tr>
<td>Local</td>
<td>1,208,000</td>
<td>91</td>
<td>109,928</td>
</tr>
<tr>
<td>Total Subsidy</td>
<td></td>
<td>360,048</td>
<td></td>
</tr>
</tbody>
</table>

Source: Study, Chapter V. B

Source: Study, Chapter V. D

Source: Study, Chapter V. E

Source: Study, Chapter V. F

Source: Cree Report, Table 8

**Pesticides Subsidy (1991/92)**

No Data

Source: Study, Chapter V. E

**Credit Subsidy (1369)**

<table>
<thead>
<tr>
<th>Value</th>
<th>Cost of Production</th>
<th>Sales Proceeds</th>
<th>Total Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB interest income</td>
<td>49,000</td>
<td>500</td>
<td>46.0</td>
</tr>
<tr>
<td>Notional income at Market rates</td>
<td>132,360</td>
<td>750</td>
<td>29.9</td>
</tr>
<tr>
<td>Total Subsidy</td>
<td>83,360</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Study, Chapter V. F

Source: Cree Report, Table 8
CROPPED AREA TRENDS for main CROPS (end)

APPLE

TOTAL NUTS

PISTACHIO

ALMOND

Table 3.2
PRODUCTION TRENDS for main CROPS

WHEAT

BARLEY

PADDY

PULSES

FODDER CROPS

OIL CROPS

COTTON

SUGAR BEET

Table 3.4
Table 4.1

Total Budget
Ministry of Jihad (MoJ) 1371 (1992/3)
(Rls Million)

<table>
<thead>
<tr>
<th></th>
<th>Investment</th>
<th>Recurrent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Ministry</td>
<td>23,741</td>
<td>27,710</td>
<td>51,451</td>
</tr>
<tr>
<td>LAD</td>
<td>12,605</td>
<td>5,812</td>
<td>18,417</td>
</tr>
<tr>
<td>Veterinary</td>
<td>16,275</td>
<td>13,613</td>
<td>29,888</td>
</tr>
<tr>
<td>NAO</td>
<td>19,600</td>
<td>3,400</td>
<td>23,000</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>149,912</td>
<td>59,520</td>
<td>209,432</td>
</tr>
<tr>
<td>Shillat</td>
<td>15,924</td>
<td>--</td>
<td>15,924</td>
</tr>
<tr>
<td>Meat Organization</td>
<td>6,000</td>
<td>--</td>
<td>6,000</td>
</tr>
<tr>
<td>FRO</td>
<td>81,002</td>
<td>21,070</td>
<td>102,072</td>
</tr>
<tr>
<td>Iran Leather Company</td>
<td>6,000</td>
<td>--</td>
<td>6,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>331,059</strong></td>
<td><strong>131,125</strong></td>
<td><strong>462,184</strong></td>
</tr>
</tbody>
</table>

Source: MoJ

Note: Figures vary slightly from those in the breakdowns in Tables 4.2 and 4.3.
### Table 4.2

<table>
<thead>
<tr>
<th>Item</th>
<th>Plan/Chapter Title</th>
<th>National</th>
<th>Ostan</th>
<th>Deprived Areas</th>
<th>Art. 29</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New Government Buildings</td>
<td>---</td>
<td>3,273,000</td>
<td>---</td>
<td>---</td>
<td>3,273,000</td>
</tr>
<tr>
<td>2</td>
<td>Public Education</td>
<td>---</td>
<td>1,876,000</td>
<td>---</td>
<td>---</td>
<td>1,876,000</td>
</tr>
<tr>
<td></td>
<td>Elementary</td>
<td>---</td>
<td>104,000</td>
<td>---</td>
<td>---</td>
<td>104,000</td>
</tr>
<tr>
<td></td>
<td>Middle School</td>
<td>---</td>
<td>506,000</td>
<td>---</td>
<td>---</td>
<td>506,000</td>
</tr>
<tr>
<td></td>
<td>High School</td>
<td>---</td>
<td>330,000</td>
<td>---</td>
<td>---</td>
<td>330,000</td>
</tr>
<tr>
<td>3</td>
<td>Government Employees Housing Plans</td>
<td>---</td>
<td>250,000</td>
<td>---</td>
<td>---</td>
<td>250,000</td>
</tr>
<tr>
<td>4</td>
<td>Urban Development</td>
<td>6,000,000</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>6,000,000</td>
</tr>
<tr>
<td>5</td>
<td>Environmental Hygiene</td>
<td>5,000,000</td>
<td>14,000,000</td>
<td>27,120,000</td>
<td>---</td>
<td>46,120,000</td>
</tr>
<tr>
<td>6</td>
<td>Rural Development and Reconstruction</td>
<td>5,350,000</td>
<td>11,238,000</td>
<td>2,500,000</td>
<td>4,200,000</td>
<td>23,288,000</td>
</tr>
<tr>
<td></td>
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Art. 19: Meat and cheese ... Government has saved $46 million by not importing and will spend on development = $35 million

Source: MoJ

m:\iran\rags\table4.2
Table 4.3
Recurrent Budgets
MoJ and Related Organizations 1371 (1992/3)
(Rls. Million)

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Source: MoJ